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THE NEW PHILOSOPHY.

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No. 1

THE FIBRE.

PART II.

THE ARACHNOID TUNIC.

328. The arachnoid tunic, a name borrowed from *Arachne*, whose web or fineness it imitates, adds itself to the upper part of the pia mater, and like a second layer of the latter, is transmitted with it into the several external tracts and hiatuses, depressed, elevated or even with the surface, but does not enter the furrows and ridges. On this account, when it is removed, the nature of the cerebrum and particularly of the cerebellum, as being discriminated into circles, becomes evident. It invests the subjacent mater more closely in the upper part of the cerebrum and more loosely below, and above the cerebellum; more strictly in the eminences of the medulla oblongata, more laxly in the depressions; more tenaciously in the anterior portion of the medulla spinalis, and more freely in its posterior portion where it is suspended by the decurrent denticulate ligament. It also restrains the nerves in their beginnings.

329. RIDLEY (*Anatomia Cerebri*). It was the opinion of the old anatomists that the pia mater was the only other integument of the cerebrum, and that it was a single integument. This was admitted as being the plain truth equally by two somewhat recent anatomists, the learned investigators Willis and Vieussens, and by all the newer writers, if we except Bidloo and Bohn, each of whom claims to have found,—the one three hours after death, and the other fifteen days after,—another distinct cerebral integument stretched between the external covering or dura mater, and this inner covering or pia mater. Both these anatomists took this integument to be the origin of the

second integument proper to the medulla spinalis. Vieussens, however, supposes it to be a duplicature of the pia mater confined to this region. But the existence of an intermediate membrane in some parts of the brain, especially at the base of the cerebellum whence it is continued downwards into the medulla spinalis, and which constitutes the second integument proper to that medulla, has now been lately observed by myself,—though whether it is a separate membrane absolutely distinct from the subjacent membrane which famous authors style the pia mater and which is common to the medulla spinalis and the brain, as is also the case with the second intermediate membrane; or whether it is one and the same membrane doubled so as to consist of two layers, is a matter respecting which one may certainly entertain doubt. That I might, therefore, satisfy myself in respect to this difficulty, I instituted an examination with the utmost possible accuracy. This examination was made on a highly dropsical human brain, wherein consequently was no cavity nor any interstice that was not reached by the extravasated water. Thus wherever in the natural construction of the parts, there was a duplicature of this membrane more loose than ordinary,—such as are found at the extremity of the calamus scriptorius between the superincumbent cerebellum and the medulla spinalis; in the isthmus of space set between the cerebrum and cerebellum; over the processes called nates and testes; in the deeper part of the cerebrum between the beginning of the annular process and the first appearance or projection of the olfactory nerve, (as observed by Vesalius, who called it the process of the pia mater), there was found a large quantity of water which distended such duplicature far beyond its natural limits. (Ed. *Lugd. Bat.*, 1725, p. 12.) In my subject I found this membrane entire, and free from any division throughout its whole circumference, with the exception of the regions mentioned above. But, supposing that there was a similar formation in this membrane as is found in the membranes of other parts, I endeavored to divide it. This was done with happy success in a number of its parts; but much more easily in the beginning of the superficial folds of

the cortical part of the cerebrum, where minute interstices exist naturally, between which creep many blood vessels to immerse themselves into its cortical and medullary parts. (p. 15.) Moreover this duplicature most manifestly communicates with all the nerves both within and without the cranium, constituting by its outer layer their second integument under the first, which latter is taken from the dura mater all the way to the whole fascicle of nerves; and by its inner layer their third integument which supplies an envelope or covering to the several simple fibrils which, taken collectively, compose the whole body proper of the nerve. It is by means of the stupendous delicacy of this membrane investing these medullary fibrils, which of themselves are all insensible, that there is brought about so prompt a consensus between part and part, and between all the parts and the cerebrum itself. (p. 20.)

330. WINSLOW (*Exposition Anatomique*). The two layers of the pia mater are not so firmly coherent as those of the grosser mater. The arachnoid or upper layer is not continuous with the lower except by means of a cellular tissue which accompanies their whole common extension excepting in certain places at the base of the brain, etc., where the inner layer continues its insertions* while the outer is spread evenly over the more raised parts, and in the intervals between the said parts is entirely separated from the inner layer without any intervening cellular tissue. By reason of this ability to separate in a number of places, the upper layer has been considered as an outer or third envelope distinct from the pia mater, and called the arachnoid. The web or cellular tissue accompanies not only the common extension of the two layers but also the particular extension of the inner layer in all its duplicatures and septa, as can be best exhibited to the sight by inflation. (*Traite de la Teste*, n. 51, 52.) If merely a little opening be made in the outer layer above the lobes of the cerebellum,† and by this opening the cellular tissues be inflated, it will be seen that by means of the inflation the two

*So Winslow; but Swedenborg has "expansiones" *expansions*.

†Thus Winslow; but Swedenborg has "cerebrum."

membranes are gradually separated; and at the same time will come to view the beautiful ordination of the membranous septa or duplicatures of the inner layer and the multitudinous distribution of blood vessels winding therein. Especially will this be seen after a successful anatomical injection, or when the membranes are in a state of inflammation. (*Ibid.* n. 101.)

331. The arachnoid membrane is seen to be most distinctly separated from the pia meninx in the interval between all the eminences of the inferior surface of the medulla oblongata, except that between the two layers is noted cellular tissue. The internal layer, or pia mater, adheres more frequently to the surface of the intervals than to that of the eminences; but the external is as though lifted up by the eminences and stretched out evenly between the parts receding therefrom to which it is firmly united. (*Ibid.* n. 116.) In the medulla spinalis this membrane is more distinctly separated from its internal meninx, so that by inflation it can be elevated from one end to the other, when it presents the appearance of an intestine; but the inner layer is firmly agglutinated to the medulla and sends into it many septa and productions. If air be forced through a hole made in this pia meninx, it raises the surface on the one side, and on the inside it separates it from the subjacent medulla. (*Ibid.* n. 188.) The arachnoid membrane separately accompanies the originary fascicles of the nerves all the way to their passage, [from the cranium], and forms a species of interrupted duplicature between the little cords which creep through the dura mater. (*Ibid.* n. 158.) It adheres to the pia mater* more firmly below than above, and, in a manner, is suspended by the denticulate ligament which rules all along the two sides of the medulla. (*Ibid.* n. 129.)

332. HEISTER (*Compendium Anatomicum*). In the upper part of the cerebrum the arachnoid tunic is so closely adherent to the pia mater that it cannot be separated therefrom without laceration; but in the lower part, especially around the cerebellum, the medulla oblongata, and the whole of the spinalis, it is so loosely connected that it can be easily seen. Like the dura

*So Winslow; but Swedenborg has "dura mater."

mater, the arachnoid is extended through the whole of the brain and medulla spinalis, as can be seen if it is suspended in water or spirit of wine. It has no blood vessels. In appearance it is like a spider's web (n. 268). In the medulla spinalis anteriorly it is closely conjoined to the pia mater, while posteriorly it floats, as it were, freely (n. 273).

333. A delineation of this membrane may be frequently seen in anatomical works. Bidloo shows it separated from the pia meninx and laid back. He says that it is whitish, and he exhibits it as furnished with minute blood vessels; as coarser than the fine meninx, (pia mater), and finer than the coarse, (dura mater); as found in all the gyrations of the brain. See particularly Ruysch's delineation, where the membrane is shown separated by inflation from the subjacent meninx. In this delineation also are seen the sulci or anfractuositities covered by both layers, with the result that their depth is obliterated; and also the most minute portions of the same membrane elevated by the inflation simultaneously with the other and lower membrane. Vessels of the utmost minuteness, (says Ruysch, in the description of his table), are brought to view by the inflation, and they derive their origin, not only from the aforesaid inflation, but also from a watery moisture which lodges between the membrane in question and the pia mater. *Epistolae ix.*)

334. RUYSCH (*Epistolae*). I confess myself beset with many difficulties in the matter of delineating the arachnoid membrane; for it is so subtle, and in so many places closely attached by fibrous connections to the subjacent pia mater and its blood vessels, that by no possible skill can the whole of it be separated uninjured, especially in the place where it invests both hemispheres of the cerebrum on the upper surface under the dura mater. In various places it is indeed elevated by air forced in through a little tube, but it at once subsides and disappears. Anyone, therefore, can conclude without much trouble as to the difficulty, nay the impossibility of delineating it in an uninjured condition. In the region of the cerebellum, however, and especially in the posterior part, and also in the region of the medulla spinalis, it is very easily separated from

the other envelope by inflation. This arachnoid membrane has the peculiarity,—never before observed by me either in the coarse mater or in the pia mater,—that not only is it so subtle a membrane that there is none more subtle in the body, (for which reason also its first finders, Blasius, Sladus, Suida, and Swammerdam, etc., adorned this membrane with the name Arachnoid), but, moreover, that when by inflation it is disjoined from the subjacent mater in innumerable places, it takes on the appearance of a cellular membrane, especially in the membranes of the cerebrum which are beset by copious humor; and yet it is not at all cellular. Moreover it is not likely that fat, which I have sometimes found under the dura mater, has lodgment in this arachnoid tunic; since in the upper part of the cerebrum it is possessed by extremely few arterioles, if indeed by any. But the fat, I think, adheres only in the pia mater. As to the presence of arterioles, they have never come to my sight. I confess indeed that sometimes certain vessels have been seen dispersed through it in the region where it invests the medulla spinalis, from which circumstance one may conjecture that it also enjoys its own blood vessels in the region where it involves the upper part of the cerebrum. But to construct vessels by conjecture is, I esteem, a very different matter from showing them, and, indeed, having them depicted as Bidloo has done. The blood vessels scattered through the pia meninx do indeed perforate this arachnoid tunic in places, but I have never been able to observe any ramifications communicated to it in the region of the anterior hemispheres of the cerebrum. Indeed I have frequently been deceived by these blood vessels scattered through the pia mater which have the appearance of running also through the arachnoid; but on deeper inspection I have detected my error. Do not believe either that this tunic is so gross as Bidloo's table, already referred to, indicates; for, as I have said, I do not find a more subtle tunic in the whole body. (*Epis. ix.*)

[334a. NUCK (*Adenographia Curiosa*). But you ask, Do lymphatic vessels occur in the cerebrum? Although some of our more recent authors, who have been very liberal in describing them, concede and readily admit their existence, yet, as I

frequently observe, they form systems in their own brain, and make up viscera at their own pleasure. For when called upon for experiments they are able to show nothing out of the common. To speak frankly I have never as yet been able to touch the mark in this part. Meanwhile I think it cannot be denied that lymphatics have sometimes been seen in one or other part of the cerebrum, and not long ago a close friend of mine, an anatomist, informed me, "I have seen a lymphatic vessel in a cow's brain which should be well worth your examining to learn its origin and insertion. Not far from the pineal gland, from which perhaps it gets branches, it lies on the choroid plexus extending to the side of the infundibulum." Two years ago I saw a lymphatic going from the pineal gland just as from other glands. Thus it is indeed quite certain that the brain also has its aqueous streamlets, but they have not yet been brought distinctly to light. (Ed. *Lugd. Bat.*, 1696, p. 149.)]

335. I have put this little Transaction on the Arachnoid Tunic immediately after the preceding Transaction on the Fibre, for the reason that it is the arachnoid tunic which derives the moisture expressed from the meningeal vessels to the spaces between the fibres and between the layers of fascicles. For it has been shown that throughout its whole extension the nerve is like a filter or a perforated cane, in order that it may transmit distinct juices by distinct paths. This juice separates the junctures of the fibres and the layers of the fascicles and anoints them and lubricates the paths. Nor do I think that anyone can call into doubt the permeability of such fluid through the many-apertured structure of the nerve, if he gives even slight attention to the numerous phenomena of fluid nature, all which indicate that a humor whether aqueous or oily is borne almost spontaneously from the lowest region to the higher, and in every direction obliquely; as is the case in stalks, branches, leaves and grasses, where it is borne from the roots to the very top; so likewise between marbles and other smooth and closely united bodies, provided only there be something bibulous placed between them, such as blotting paper, a moist bladder, (*viscera madens*), some sheath-like

membrane ; so also through the threads of cotton cloth ; through ashes, salts, sugars ; and even through rocks, plates of selenite and spar, metalliferous veins ; nay, even through gold, and all other materials, as shown by experience. A glass goblet half full of a salt solution or salt water and exposed to the sun or to dry air, in the course of a few days is encrusted, both within and without to the very bottom, with a dense salt and crystal, through the ordinately arranged pores of which water creeps up, and, on the outside, down, and circulates on the sides encrusted with salt,—as I have often seen by experiment. The little seeds of vegetables thrown on the moistened side of an earthen or clay vessel take root as in their own soil, and the outside of the vessel grows green and leafy if only water be kept in the vessel which shall constantly filter through. Since such phenomena obtain in the mineral and vegetable kingdoms, what not then in the animal kingdom where exist so many animating principles ! so many tortile motory spirals, or tiniest presses ! a fluid highly elastic, expansile, contractile, of the most perfect form, and moreover, threads formed after the whole nature of such fluid ! Such an organic and motor machine, while it lives and flourishes, acts and is acted upon, cannot but transmit with discrimination the several kinds of essences, and after transmitting, distinctly reunites them. But now to the tunic itself.

CHAPTER I.

THAT THE ARACHNOID TUNIC IS CONTINUED THROUGH THE WHOLE OF THE CEREBRUM, CEREBELLUM, MEDULLA OBLONGATA, AND MEDULLA SPINALIS.

336. *The arachnoid tunic is the upper layer of the pia meninx, and is so distinct therefrom that by injection and inflation they can be separated.* The case is not like that of the upper layer of the dura mater which is united to the lower by intervening fibrous vessels. It is different with the arachnoid ; for although in certain places it is conjoined to the lower layer by ligaments and septa, yet it frequently stands off for entire spaces. Therefore, it can be elevated by inflation, as in

the cerebrum, according to Ruysch's experiment, n. 333, 334; and in the cerebellum and medulla spinalis, according to Winslow, n. 330 and 331,—which authors the reader may consult for himself. *It is spread over the pia meninx everywhere on the surface, but not where the pia enters into the folds and anfractuosities, and doubles itself.*

337. *The arachnoid is extended over the whole cerebrum from its very top to its last borders; and from there it is continued into the medulla oblongata, and from this into the medulla spinalis; nor does it cease except in the last apex of the cone where cease also the other meninges. It passes from the cerebrum into the medulla oblongata from the lower part and from the upper part. From the lower, it passes over the annular protuberance,—as was observed by Ridley (n. 329 sup.) in a dropsical brain. His words are, "There is a looser duplicature of this membrane in the deeper part of the cerebrum, between the beginning of the annular process and the first appearance or projection of the olfactory nerves, as observed by Vesalius who called it the process of the pia mater, where was found a large quantity of water." From the upper, it passes around the testes or through the isthmus, which is the tract mediate between the cerebrum and cerebellum where are situated the testes, the nates and the pineal gland. This also is according to Ridley and the other authors. This path is laid down from the cerebrum to the medulla oblongata, and here also is the path of its fibres. That it leads from the isthmus and over the nates, confer Ridley, n. 329, above.*

338. *It is extended also over the whole cerebellum, and in like manner is continued therefrom to the medulla oblongata, and from the latter to the medulla spinalis. It passes from the cerebrum to the medulla oblongata also from two sides.—from the lower, to the annular protuberance, and from the upper, around the fourth ventricle, and, in fact, through the peduncle and the vermicular process which is the common node and gathering up of the circles of the cerebellum. Such also is the continuation of the pia meninx which it accompanies; and so also do the fibres proceed. That it flows down from the cerebellum towards the fourth ventricle or towards the lowest part*

thereof which is called the *calamus scriptorius*, is mentioned by Ridley and also by the other authors enumerated above.

339. *Thus the arachnoid tunic extended over the cerebrum, is conjoined in the medulla oblongata with that which is extended over the cerebellum; and from the two sources it coalesces into one membrane, and, thus united, flows down through the great foramen of the occiput, over the whole medulla spinalis, constituting the second integument proper to the latter.* According to Vieussens, who is cited by the other authors, though Vieussens mentions a third integument proper to the spinalis.

340. *From the above considerations it is clear that this tunic is a perpetual and continuous membrane throughout the whole encephalon, being in this respect different from the pia meninx and also from the dura; these are indeed continuous, but with an interruption by folds and insinuations. For the pia mater connects the several parts in particular, while the arachnoid tunic connects the same parts in general. It does not, like the pia mater, insinuate itself into the anfractuosities and furrows, but is extended over them. Thus it does not enter into the cerebrum or cerebellum, but is entirely superficial; for when it is removed, the cerebrum and cerebellum appear bare with all their anfractuosities and sulci. Confer Winslow, n. 330.*

341. *Thus the pia mater is a superior universal membrane, the arachnoid an inferior universal membrane, and the dura mater a general membrane; for the latter does not let itself into the several parts, but forms processes only around the larger sinuses which are called sinuses of the dura mater.*

CHAPTER II.

THAT THE ARACHNOID TUNIC ENCLOSES A LYMPH OF THE MOST CHASTENED NATURE.

342. *Since the arachnoid tunic is separable from the subjacent meninx, both by injection and by inflation, and in dropsical brains has actually been separated, it follows that there is an interfluent humor which keeps them apart; otherwise they would coalesce.*

343. *The pia meninx perpetually exudes a certain dew.* I wish to adduce entire the remarks of Pacchioni respecting the perpetual exudation of the pia meninx, in order that it may be clear that this meninx is itself a perpetual spring of humor. His words are: "After you have carefully cut away the cranium and turned over, from the forehead to the occiput or to either side, a not inconsiderable portion of the dura mater in such way that the stronger cohesions of the two meninges still remain; and then shortly afterwards have wiped off the dew of the meningeal substance, you will see new drops coming from the substance, and the same kind of moisture, and this even without any pressure of the finger,—a most sure proof, not only that the pia meninx is for some reason externally pervious and perforated, but also that in its foramina or punctures trickles something of the nature of lymph. Moreover, what shall I say respecting that oleaginous lymph which is found between the pia meninx and the tortuous and deep anfractuositities of the cerebrum! This is by no means supplied by the cortical glands of the cerebrum and cerebellum, for after you have wiped off the latter you will certainly not observe anything of the nature of humor flowing out therefrom. Nay, the reverse, since the entire inner surface of the pia meninx, after being further wiped, always moistens, and abounds with a whitish mucous springing from every direction, and this even though it be torn away from the dura mater and the cerebral cortex. That this same lymph abounds in oily particles needs no better proof than sight and touch. If you use your eyes, the pia mater will be discerned, in some cadavers, to be sprinkled over with innumerable round and whitish particles,—a fact to which my attention was called by an observation of that most diligent anatomist Ruysch to the effect that in various places the pia meninx is rich with fat." (*Opera. Romae*, 1741, pp. 116-118.) *So likewise the arterioles which creep between the two layers.* The arterial offshoots which wind in the duplicature are present in the greatest abundance. Now if the mater itself sustains so numerous a cohort of arterioles which at various points adhere to it and which pierce both

itself and at the same time the arachnoid tunic, according to the observation of Ruysch,—moreover a certain fibrous offshoot connects the two, (n. 334),—and if secretion be granted to the arteries of the cerebrum as it is granted to those in the body, it necessarily follows that a perennial humor perpetually flows between the two membranes, that is, under the arachnoid. *When the cerebrum and cerebellum, and at the same time the medulla oblongata and medulla spinalis, swell up during their alternate animations, juice is expressed, and it is taken up by the spaces between the two layers; no otherwise than as is the case in the membranes of the body on every alternation of the diastole and systole.*

344. *As to the nature of that juice it is known from its source and from the tunic itself. The source, which is the pia mater and the smallest arterioles, can pour out no other juice than such as is of a better nature, that is, than purer blood together with suitable serum.* In the Transactions on the Blood and the Cortex,* it has been shown throughout that the red blood, as it passes into the smaller arteries, is divided into a purer blood which is white and which is styled by us the middle blood and middle animal essence; for the grosser serum is rejected in every direction, and the purer, together with a like blood, retained. A better humor of the same kind is also drawn off from the cerebrum. Moreover, in the Transaction on the Pia Mater, it comes to be demonstrated that this membrane is purely vascular, that is, is woven of the extreme capillaries of arterial vessels, but not of the genuine fibre of the cerebrum; for no fibre is reflected into this mater from the cerebrum. Now if it be vascular it must also necessarily distill a noble shower, and this under the arachnoid, that is, from its outer surface; while from the inner surface comes a subtle fatty humor with which that moisture is mingled. And, therefore, Ruysch rightly deems (n. 334) that it is not fat that is contained in those little cells. *The tunic itself, that is, the arachnoid, is a delicate tunic, than which a more delicate does not exist in the body,—as Ruysch cautions us three times*

*Economy of the Animal Kingdom, vols. i and ii.

as against Bidloo, n 334 above. The contained juice and the containing tunicle most exactly correspond to each other. Thus the lymph must certainly be of the most chastened nature; that is to say, it must be a most highly rectified serum commingled with the purer blood,—such, in fact, as is found in this duplication. “Vessels of the utmost minuteness, (says Ruysch in the description of his table), are brought to view by the inflation, and they derive their origin not only from the aforesaid inflation but also from a watery moisture which lodges between the membrane in question and the pia mater” (n. 333); and moreover in hydrocephalic subjects, descriptions of whose brains frequently occur in anatomical works, in which brains these spaces are everywhere filled.

CHAPTER III.

THAT THE LYMPH CONTAINED UNDER THE ARACHNOID TUNIC FLOWS DOWN BETWEEN THE MEDULLARY FIBRES OF THE CEREBRUM AND THE NERVE FIBRES OF THE BODY.

345. *In the Transaction on the Fibre it has been shown that between the medullary fibres of the cerebrum and the nerve fibres of the body are little interstices through which trickles a most highly rectified humor. That there are little interstices between the fibres, n. 192; that a humor permeates those interstices, and what its nature, n. 194, 203, 209; and that this humor showers down from its very origin, that is, from the cortical substance, n. 197, 218, 344. For this end the arachnoid tunic takes up a most highly chastened lymph exhaled from the pia mater and secreted by the interfluent arterioles, and sends it down through those finer anfractuosities, sulci and furrows whereby the cortical cerebrum is discriminated and the pia mater divided. For there are lesser and least anfractuosities, which we style furrows, obliquely and variously extended between the larger, especially at the bosses of the cerebrum; into all these the pia mater slightly bends down and insinuates itself, and through them all flow down arterioles. Whenever, during the intumescence of the cerebrum the mater is expanded, it sends it away. This lymph is aptly derived to*

the spaces between the cortical glands, and thence to the spaces between the fibres; for when this juice falls down to those lesser interspaces it can be carried no where else than to the spaces between the fibres. Confer n. 197, 218. Especially must this be the case if purest stamens detached from the pia mater form the softest meninx of the cortical gland; and therefore, the humor can flow off into no other spaces than those which are intercepted by the cortical glands, n. 172. For in the medullary substance of the cerebrum are smaller and larger plexuses of fibres through which this humor is continued all the way to the nerves, 195, 229.

346. *Where many cortical glands flourish, and where they are most highly active above the rest,—as is the case in the sinciput or prow of the cerebrum,—there, not only is the pia mater more particularly and frequently furrowed, but it is traversed by more numerous arterioles and the arachnoid tunic is divided into more minute cells; to the end, namely, that it may administer fluids distinctly to each fibre and to each fascicle of fibres; and this in accordance with every need, as demanded by each fibre according to the degree of its activity. That the cellular tissue of the arachnoid tunic is more abundant near the top of the cerebrum than elsewhere, is established by all our authors,—Ridley, n. 327; Winslow, n. 330, 331; Heister, n. 332, and Ruysch, n. 334.*

347. *Likewise in the medulla spinalis to which it is closely bound on the anterior side, and loosely on the posterior; for from it there opens a passage through a chink, together with a great abundance of arterioles, into the cortical substance, in order that it may provide therefrom for the several interstices of the fibres. In these particulars also we have the consent of the authors cited. So also elsewhere; whenever there are many cortical substances, and fibres springing from them, they demand a greater quantity of humor.*

348. *But where the origins of the fibres, that is to say, the cortical glands, which are directly covered by the pia mater, are conglomerated not so near the surface, there the arachnoid is not distinguished and connected up into so many cells; and hence it does not become so closely adherent to its accompan-*

ing *meninx*, but is stretched out and smoothed into a flatter membrane; as is the case in the region more remote from the top of the cerebrum, over the cerebellum, frequently in the medulla oblongata, and at the posterior side of the medulla spinalis. Consult the authors quoted above.

349. The arachnoid tunic, wherever it goes, is still attached to its *pia meninx* by means of septa, but here more strictly, there more loosely; in one place more densely, in another more sparsely; and also in divers ways. In such way, however, that from one cell there is a passage opening into another,—a passage which has continual respect to the origins of the fibres whose interstices it irrigates with the required humor.

350. These tunics dispense this fluid not arbitrarily but by law and command. For it is action in the extremities, that is, in the muscles of the body, that governs the quantity; that is to say, a greater action demands a greater quantity, and a lesser action a less. For the motor fibres of the body whereby action is determined correspond to the medullary fibres and to their cortical glands in the cerebrum which determine the action. Thus it is these glands which designate the amount of which they have need, and which agitate the *meninx* spread over them, and the arterioles, in such measure that these pour on the proportioned amount of humor.

351. Without a perennial spring and interfluent lymph of this nature fibres would easily coalesce; and then the individual forces of the fibres and the individual forces of the muscles would coalesce into simultaneous forces and finally into general forces,—as is usually the case in subjects worn out by old age, and in other subjects, in whom motor fibres no longer carry out the will of their animus. See above, n. 198, 225. Hence this lymph, is as it were, a lubricant which anoints, smoothes, and lubricates the hinges. The contrary effect results when this humor flows in too serous or sluggish, as is the case in dropsical subjects, paralytics and epileptics.

352. When the animal draws its dying breath, and the brain makes its animations more deep, and rises and throbs to greater height, that is, spends all its powers and resources for the restoration of the organic and motor machine of the body; and

when the arteries, soon to collapse, drive the full tide of their blood into the veins, and themselves secern nothing; then, whatsoever of humor lies under the arachnoid is expelled into the fibres. Thus the membrane is emptied out. This is the reason why, in the dead, it is rare that any quantity of this lymph comes to view.

CHAPTER IV:

THAT THIS SAME LYMPH IS DERIVED TO THE SPACES BETWEEN
THE FASCICULAR LAYERS IN THE NERVES.

353. *Each fascicle of fibres, which, when within the cranium and the vertebral sheath, called a beginning of a nerve, is covered with a double or triple tunic. The inmost regards the fibre and the outmost the fascicles associated together in the nerves. These layers are held apart and prevented from coalescing by a juice of the utmost fluidity. This juice is none other than that which trickles between the fibres, or which, also for this use, is laid up under the arachnoid tunic. That the tunic of the fascicles is double or triple, see above, n. 215, 216, 217. That ligaments run from the inmost tunic of the nerves into the outmost tunic of the fascicles, n. 221, 222. As to the use which the duplicatures of the membrane perform in the nerve, see 224, 227.*

354. *The arachnoid tunic not only covers the cerebrum and cerebellum but it also accompanies the beginning of the nerves, both in the cranium and in the medulla of the spine, all the way to their exits; and thus it sprinkles the same noble juice between the layers as between the fibres. That this tunic, induced over the beginnings of the nerves, follows them all the way to the foramina in the cranium and vertebrae, confer Ridley, 329,—but, from their appearance when seen by the naked eye, Ridley calls those beginnings fibrils. Winslow, however, describes the matter more accurately, n. 331; and he is confirmed by Heister, n. 332, and others. Thus it appears that the principal charge of the arachnoid tunic is over the nerves in the body.*

CHAPTER V.

THAT THE ARACHNOID TUNIC IS A PERPETUAL LYMPHATIC DUCT,
IN THE CEREBRUM, CEREBELLUM, MEDULLA OBLONGATA
AND MEDULLA SPINALIS.

355. *Lymphatic vessels such as occur in the body have long been sought for in the brain, but hitherto they have not been found. For the universal arachnoid tunic or duplicature is one single vessel or one single lymphatic duct,—but one that is continuous and is projected into a plane, that is, is extended breadthwise at the same time as lengthwise. Pacchioni, to say nothing of other anatomists, expended no labor in detecting lymphatic vessels in the cerebrum; and he asserts that he has found a number of them in the pia meninx. But other keen sighted anatomists affirm that such vessels have been seen only in diseased brains; moreover these vessels openly communicate with the arachnoid tunic, of which they seem to be folds or corrugations. Nuck affirms that a lymphatic vessel was seen by him in the choroid plexus, but none as yet in the surface of the cerebrum [n. 335a]. But it ought to be plain from the use whether it is required that they exist in the brain in the same way as in the body.*

356. *The lymphatic vessels of the body carry a lymph purged of every dreg; a like lymph is also carried by the arachnoid duct within its tunic. For when their nature is explored both lymphs, subjected to heat, fly off into a subtle vapor, nor do they leave anything earthly and dead, as does common water. Thus they agree in nature. The lymph of the cerebrum,—which is the same as this lymph contained under the arachnoid tunic,—and that of the lymphatic vessels has been tested by many and it has been found that both lymphs present the same nature and purity. From other tests it may also be concluded that the lymph, both of the brain and of the lymphatic vessels, is not purely elementary, but is commingled with animal [substance], such as is suitable to the blood in order that it may be recompounded; wherefore all the lymph in the body is carried off into the veins.*

357. *The lymphatic vessels of the body are visibly woven of a most delicate membrane, than which there is none more delicate. So likewise the arachnoid membrane, especially in the uppermost region of the cerebrum; as is acknowledged by Ruysch, n. 334. The delicacy of these two membranes, of itself proves nothing except that the contained juice and the containing tunic mutually correspond to each other, n. 344.*

358. *The lymphatic vessels of the body are not continuous ducts like the arteries and fibres, but are interrupted, and are of a vesicular and cellular structure, though pervious from cell to cell with an open passage,—which perhaps is demanded by the nature of the fluid; exactly as is the case in the arachnoid tunic, which is not continuous but is attached to the meninx by intermediate septa, and is discreted into numerous cells with a passage opening from cell to cell.*

359. *The lymphatic vessels in the body draw their juice from the last extremities of the arterioles; thus they draw a purer blood associated with a suitable serum. Such a juice is also drawn by the arachnoid duct, see above n. 344.*

360. *The lymphatic vessels convey almost all their juice, collected from every viscus, muscle, gland, into a single thoracic duct; but the arachnoid duct is, from the very first, a single duct diffused throughout the whole encephalon. For the viscera and muscles of the body do not cohere, nor do they concord in the forces and moments of their action; and, therefore, the lymph must be conducted into one stream. The case is different in the brains and their medullas.*

361. *The lymphatic vessels of the body unload their pure lymph* into the veins, and especially into the subclavian; to the end that their juice may return by a circle from blood to blood, and may enter the red blood which is resolved at every turn of the circulation. It is a little different in the case of the arachnoid duct which, in fact, unloads its juice not imme-*

*The text has merely "suam puram,"—the addition of the word "lympham" being required to complete the phrase. Having in

view Swedenborg's usual style, we suspect the true reading to be "suum succum," as in the preceding paragraphs.

diately, but mediately after it has first passed through the structure of the nerves; see above n. 199, 200, 319. Moreover the cerebrum pours a similar, fresher, and still more noble essence into its jugular veins and by these into the same subclavian vein, from the opposite side to that from which the lymphatics pour in theirs. That the cerebrum transmits a copious animal juice from its anterior* and third ventricles, through the infundibulum, and by means of the pituitary gland, into the jugular vein, will be seen demonstrated in the Transactions on the Cerebrum.

362. Such then is the agreement between the lymphatics of the body and the arachnoid of the brain. The lymph is of like nature and origin. The membrane itself is of like texture,—both tunics being, without doubt, cellular,—and of like fineness. Thus they mutually correspond to each other, and perhaps mutually respect each other, in the way, namely, that this lymph of the brain, after passing through the nerves, is poured into the arteries of the body; from the arteries it returns through the lymphatics into the veins; from the veins, by means of the heart, into the arteries, and that which returns to the carotids is again unloaded into the common lymphatic vessel of the brain, and so, passing through the nerves, it again returns into the lymphatic vessels of the body through a perennial circle,—except as concerns that part of it which is spent on the uses of the kingdom. Thus prudent care is taken that nothing of this noble offspring, the lymph, shall be lost until it has performed its use in the inmost penetralia of the body.

363. That this universal duplicature of the cerebrum is made up of an infinitude of lymphatic ducts coalescing into one, is, for one reason, because the origins of the nerves are scattered through the cerebrum and cerebellum and also through the medulla oblongata and medulla spinalis, and all these origins, and consequently the nerves, in whatsoever corner of the body they act, must be looked out for from a general [centre]. And because there is a passing from one

*The lateral ventricles.

cell to another, there is a most perfect communion of this good or lymph, as there is also of the blood in the cerebral arteries, and of the juice in the arterial tunics, n. 179. For whatever of fluid is found in one cell of the arachnoid, this same is communicated to all the cortical glands, the fibres, and the nerves in the body; so that there is not a fibre which cannot make demand on this public for what it needs, and as it were assert to itself as though its own, all that is in the common store. This is of the greatest importance to the nervous system and to the whole animal economy which depends on the state of that system.

364. For on this tunic's or arachnoid's integrity, continuity, connection with the pia meninx; and on the quantity, quality and dispensing of this lymph, depend the lot and condition of animal life. For from defect of this humor the fibres coalesce; from its afflux they are held apart; from its malignity, they are puckered and injured, and together with the appended motor fibres, are agitated into stormy motions, etc.

365. The meeting place, whither flows all this lymph contained under the arachnoid, is the lowest and posterior region of the medulla oblongata around the calamus scriptorius. Thither it flows down from both brains and is derived from every circuit of the medulla oblongata. "A looser duplicature, (says Ridley), was found at the extremity of the calamus scriptorius," n. 329. And from there it goes down through the great foramen of the occiput to the posterior region of the medulla spinalis. In that region a passage opens also for the pituitary lymph contained between the dura and pia meninx; for there is an intervening space. But this is not the case in the anterior region, according to Vieussens' observation. In that place also there is a reticular plexus, not unlike the choroid, which sprinkles on its fluid. The reader will see this plexus and the signal use performed by the fourth ventricle and the calamus scriptorius, treated of in our Transactions on the Brain. For the arachnoid tunic adheres to the anterior part of the spine more closely, and, therefore, the fluid is led around to this opposite side as to its meeting place. Accord-

ing as the affluent stream is greater, so the membrane is strengthened; and, therefore, in the medulla of the spine it is denser, somewhat reddish with bloodvessels, and constitutes its second true integument. That the arachnoid tunic in the medulla of the spine is besprinkled with bloodvessels, is not denied by Ruysch, although he is sharply contending against Bidloo that in the cerebrum it is the most delicate of all membranes. The spinal nerves also demand a considerable quantity of this fluid, since they are the nerves that enter into the most active muscles of the body.

CHAPTER VI.

THAT THE ARACHNOID TUNIC PERFORMS MANY OTHER USES.

366. *The arachnoid tunic also restrains the grosser and pituituous humor, collected between the dura and pia mater, from flowing down to the spaces between the lesser folds and tortuous ridges of the cerebrum and infesting the fibres in their beginnings, that is to say, stopping up the little spaces between the corticle substances; for a sluggish and pituituous humor of this kind, if poured around the cortical glands, would easily stop their activities and agglutinate the junctures of the fibres.*

367. *From the arterioles under the pia meninx, there is also secerned an immense supply of serum; but it is fatty and sluggish because freighted with urino-saline and sulphureo-saline particles of the resolved blood. Unless on these particles were poured the more limpid and fluid liquor distilling from this duplicature, the fibres would be bathed about by too rough a moisture, whereby they likewise would be rendered unsuited for action.*

368. *By means of this tunic also, a host of arterioles is maintained unseparated in their natural situation and stream; for arterioles creep in due manner in the duplicature of both these meninges and are attached to both by fibrous connections. See Ruysch, n. 334. For on their arterioles depend the corticle glands; on these the fibres; on these the nerves; and on the nerves the whole animal machine. Hence it is the arachnoid*

tunic, conjointly with the *pia meninx*, which constantly holds the arterioles and by consequence the several things dependent on them, in suitable situation, distance, connection, order, law, form, mutual respect, determination,—and this, howsoever the cerebrum is expanded or constricted, lifts itself up, is tumultuous, vibrant or beaten.

369. The arachnoid tunic, with what power it can, also maintains the connections of the surface of the cerebrum divided into serpentine tracts and diversiform areas; for it overlays the several divisions, larger and smaller, that is, the sulci, when the *pia meninx* folds itself and is insinuated into them. For when the arachnoid has been removed and the cerebrum thus laid bare, they all come to view.

(End of Part II.)

PHYSIOLOGICAL PAPERS.

BY LILIAN G. BEEKMAN.

THE OFFICES OF NUTRITION (*Continued*).

INTERCOURSE BETWEEN THE HUMAN INTERNAL AND THE ULTIMATE BLOOD, OR BETWEEN THE SOUL AND THE BODY.

The human mind of the cerebrum is an intermediate organism brought into existence by means of and during the intercourse of the soul and the body. The general law here is that when the proceeding series of the human blood has attained its lowest or outmost, that outmost must be united in perfect circle to the first; and to be united, it must be in unison with that first, and this as to all its substances. The law is the same for the macrocosm as for the microcosm (*A. E.* 1223; *W. L. G.* 104; 2 *E. K.* 301).

The return must take place, be attained, through the brain or mind of man; and, upon our earth since the Fall, it must be attained by way of the cerebral brain alone. When attained the whole man partakes of the benefit, the power. The very condition of the human race, its quality, its character for earth and for heaven, depends upon and is conditioned by

the quality, type and fulness of this return; that is, of this connection of the outmost human blood with the human internal or human spirituous fluid. As is the intercourse between the two, so is the mind; or, so is the inmost "mind" able to affect and modify the mind of the voluntary-intellectual and its common sensory. As this grows or grows not so to all eternity, is the man.

The continued existence of the human race upon any earth depends upon its success or failure to accomplish and preserve the return of this circle of human life, so that "on the side of the body itself there may be a connection of the finite with the Infinite,—that in the last effect there may be a connection equally as in the first effect" (*Infinite* I, xiv, 5). And further the stability of the macrocosmic creation depends on the stability of the human race.

This reciprocal connection of the body with its prime essence, that is, of the red blood with the soul or human spirituous fluid, is of such arcane consequence that where it fails to be accomplished there the end of creation is frustrated.

As noted in an earlier section of this paper, it was for the sake of the body and the red blood of the human race, because of a threatened failure of the return connection of last blood with first upon this earth, that God Himself, "took on Him the ultimate effect of the world, or manhood and its shape, that thus the Infinite might be in and with the finite; through Him is the nexus between the first finite and the last, and between these and God" (*Inf.* I, xiv, 5).

This was the circle of the glorification of the Lord's Human Form and of its union to the Divine,—that form which was taken first from the substances of the mother's ovum and bloods, and afterwards from infilling nutritive elements of the world. The path of this circle is that which the reformation and regeneration of man must follow in its measure. Both rationality and religion are concerned in this; for it is in the line of this circle, where the red blood of the cerebrum resolves into animal spirit and winds back into the cortical gland, seeking thus to ascend and return, that minds are formed and grow. Literally they are formed, reformed, grow, as does

almost all their bulk, after birth. And, when formed, they embody the experiences and changes of the red blood quite as much as the experiences of thought and education. For "there is an intercourse between the soul and body, or, what amounts to the same thing, between the last organic forms produced by the blood and the first organic forms produced by the spirituous fluid" (2 E. A. K. 301); and this voluntary and sensitive-intelligent or intermediate mind is the "Benjamin" offspring thereof.

Thus minds or heavens,—so far as heavens consist of membranous or human-angelic organic forms,—are intermediate organics,—offspring-forms produced by the intercourse of the human internal and the red blood; and this by mediation of vessels of the purer blood. The major part of their actual constitution takes place after birth and during the experiences of life; and the stamp of their constitution is largely conditioned by the experiences, thoughts, day-dreams and habits of the waking hours. Minds thus partake both of spiritual and natural constitution, indissolubly united; and the mind in each man is qualified and individuated according to the individual qualities and individuations of that intercourse between first blood and last; for the mind lies on the very plane of conflux.

That all things of the life and growth of human minds are accomplished and expressed by the variations of the forms and states of the organic units of the brain, is a truism. That variations of their forms are the same as variations of their thoughts, principles, imaginations, sense-images, is a truism. That variations of their state are accompanied with variations of their affections, delights and desires, is also a truism. But that variations of their state are an affair of the bloods,—are specifically an affair of the individual quality and type of the salts or angular particles and the effluvial spheres which the blood and its serum carry; that the one varies with the other; that the temperament or state of the blood and that of the animus act in concert; and that these changes thus produced are what the Letter of the Word terms "affections of the heart" (*Soul* 340),—all this is perhaps not so commonly apprehended.

Nor is it perhaps commonly grasped that as the blood is pure or impure, so, "as of itself," it either strives, and is able, to open an inward communication with the shrine of the rational mind, and this even to a striving toward the internal itself; or it is unable, and falls back in its midway height like a failing fountain without spring to rise as high as its source. For, of the kingdom of the "building blood," its place and powers,—even the fact that there is such a kingdom, (although it be weaving their mind and spiritual body),—adult men and women still know as little as they knew when it was weaving their first simple rudimentary members in the womb. Yet it is not a light matter, since according to the quality and type of these outmosts, and the manner in which they can be conjoined to inmosts, such is the mind builded,—either a "living house and Tabernacle of God the Lord,"—a mind which in all its fibres opens to more and more full reception of the Divine Life and Proceeding; or, a mind reduced to chaos where the fibrils which carry celestial life become half dead and closed tendons.

Here we begin to have a more rational hold of the truth often stated in the Writings that regeneration and the purification of the red blood are so connected in the order of human life and creation, that they proceed side by side as co-workers to one end. Hence a great awe attaches to this ultimate plane of the blood, and we may justly fear to offend against its truth of purity and order, since its purity and its order are one. And the planes in which it is structurally concerned and operative are those alone in which we possess the effectual potency to act "as of ourselves,"—whether with the Lord's Providence in the ascending impulse of self-death, involution and obedience; or against it.

THE COMPLEMENTARY SPHERES. THE SOUL OR HUMAN INTERNAL, AND ITS OPERATION ON THE NUTRITIVE SPHERES
CARRIED BY THE BLOOD.

It is partly apparent what the spheres are which are carried by the blood and serum,—materials, substantials, concretions; these salts and ramental fragments of various de-

grees. We know where they originated. But how are we to regard the human internal, the soul or spirituous fluid which seems to stand in some active relation and complementary power and nature over against these broken, modified particles and spheres of past working bodies and lives? Where does this come from? What is its nature? its powers? its great name? As a further question, What, in the organic form, is it that takes and handles such separate concreted particles, *disjecta membra*, spheres, salts, ramental particles, as are carried by the serum in like manner as aqueous and aerial salts are carried by sea and air? What takes them, chooses them, sets them into place and form as sympathizing friend by sympathizing friend in series and order in the organic structure (*H. H.* 56),—assimilates them, as we say? And after they are set in place, building and completing the visibly growing structure, what is it that continues to hold them in their place and to make of all their mosaic bits an integrum, an individual, a whole of recipient form? For that man actually consists of such things as are from the earth in the atmospheres is well known (*T. C. R.* 470, *A. E.* 223); and also that he takes with him into the other world the finer of these substances that have served for infilling (*Div. Wis.* viii, 4-5). In fact, it is according to this infilling that the very definition of his visible spiritual body stands forth as human or fragmentary, whole or broken, angelic or monstrous. And since what holds together and sustains is the same as that which forms and creates, what then is it that forms in the first place? that initiates, weaves, carries to completion the fabric of organic form?

To answer the last question first. It is the soul, the human internal, the supreme and first flowing essence of the human organic form. It is the soul that creates, frames together,—these individual forms made up of fragmentary particles; the soul that holds them together; the soul that continually takes these mother-particles, these foods, these effluvial spheres from the stream of the bloods and sets them in ordered juxtaposition, and builds and assimilates them to houses of honor or houses of dishonor, according as their adaptabilities were

framed when they were parts of working bodies of old lives. It is the soul that does all this,—the human spirituous fluid, the human internal, the formative substance in and by which the Lord forms human recipient images receiving God-Man not by influx but by reception. Supremely human is that formative by which the Lord is intimately present in every part of man's body and mind, and by which man is rooted and planted in God.

With every aged and with every man there is an inmost or supreme degree, or an inmost and supreme something into which the Divine of the Lord first or proximately inflows and from which it disposes all the other interiors (*H. H.* 39).

Every unit exists from things various; otherwise it is not anything, has no form, and therefore no quality. But when a unit exists from things various, and these are in a perfect form wherein each particle joins itself to the other as a friend agreeing in the series, then it has perfect quality (*Ibid.* 56).

What then is this soul, this human formative, in its wonderful self? It belongs to, is part of, the highest, oldest, most universally present plane of the Proceeding Divine,—the volume of the first aura filling the universe. For the Proceeding Divine, the Lord as to use or atmosphere, is framed into four successive planes or degrees of foam atmospheres in the created universe from firsts to lasts. The four atmospheres of this series constitute the four apartments of the Tabernacle,—of Divine presence and operation extended in the heavens; and in like fourfold succession does the tabernacle of the heavens stand,—the heaven of the Holy of Holies, the Divine celestial covenant of life; the heaven of the Holy, of the candles of God, the Divine spiritual plane of life; the heaven of the twofold courts, inner and outer. In like fourfold order stands the series of faculty and life in the human form. The primal aura is that Holy of Holies which carries the immediate presence and operation and life of the Divine, throughout the universe everywhere; and makes it everywhere alike present with the heavens and with the earths.

Now the two ends of this series of the Proceeding Divine, the first and the last, the infinite God-Man and the ultimately

finited individual men-forms, stand over against each other; and at each end of the series the image of unity,—of the individual, of a human whole,—looks out. Moreover, each such image is endowed with (a) an interior circulation of active essences, one for each of the three kingdoms in God—Man the Lord; and (b) a proceeding, a giving forth of spheres, every particle whereof reproduces in image the powers and characters of the parent stamp.

At one end of the series is the Infinite, one and indivisible, in whose every power all creatures throughout history and evolution ever actualize, are, in more living fulness, so that their best consciousness and waking and purpose,—sweet in themselves, as they be,—are in comparison but a sleep and a shade. In Him also past, present and future are in simultaneousness of waking life; while man “wakes” only to the touch of the passing moment, and only a very little in the memory of past habit.

At the other end of the procedent series stand myriad finited “individuals,”—the subjects of the kingdoms of nature built up of finited odds and ends of broken forms of volatile and effluvial spheres,—yet each, in its own bounds or skin, possessing a workable integrum of balance, powers, sensibility, or sensitive passivity; possessing also an interior circulation, more or less active, and a perpetual efflux of radioactive spheres,—of outflowing secretions, excretions, uses, which carry distinctly individualized powers, active or passive, together with a formative power, almost like a seminal principle or substance; or, at any rate, they possess a specialized adaptability for excitation, actualization, embodiment, even as the spheres of soils which do actually impregnate seeds, stimulating and empowering their specific powers of growth according to the variations they present when adjoined to heats.

Now the sphere going forth from the finited individuals at the ultimate end of this series, is always a sphere of fragments,—finited, more or less inelastic, angular and concreted; closely structured with inner channels still presenting as a sort of fossil stamp the curves of the tides of life in the parent

individual, as that parent received, modified, turned those tides of life; or of ramental fragments finer still; or of actual portions of the interior vital fluids or vital life-formative secretions of various types,—semen, milk, lymph.

This sphere stands as complementary to, and as it were over against the sphere which proceeds in and from the Infinite,—that universal sphere of the primitive seeds, the primal points of the Sun of Life; that marvellous Word, the living primitives of which, as a very Divine Essence, conspire with the Infinite Esse to conflow together for the bringing forth of the great primal atmosphere or aura,—the most intimate body of the Lord as creative use; an aura borne in the substance of the Infinite as a form like unto a vast foam-structure, elastic, wonderful, extending in the Infinite like some marvel of living plasm, homoplasm, far as the extense of the created universe-to-be, and embodying in that universe God-Man Himself as to His creative and operative presence and energy and use.

Here we have two powers, two spheres, an active and a passive, complementary and correspondent; the last, emulating, in its fashion, the first, consists in the actual effectual existence of an adjunction, conjunction and constructive co-operation of both. That is, the two ends of the series of Proceeding Divine, must in some sort co-act and contribute for every force and every form actualized in ultimate fulness and recipience and reaction,—the active or Divine sphere giving ever, as it were, the esse, and the reacting, returning or finite sphere, the existence or infilling. This holds true for all that exists, that is actualized in form and in force; for the general forces of the universe, and for material, physiological, mental and spiritual forms and organisms.

The spheres of the Infinite consist of the four active atmospheres,—volumes of bullular particles of four discrete signs and degrees of use; apt for circulating motions; framed in the Infinite Esse, and composed of circling rows of the primal vortex points of the Spiritual Sun variously concreted.

The sphere given off in and from the finite individuals,—molecules, plants, animals, men and women,—consists of large

united irregular and angular compactions formed by those individuals within their own bodies, and formed of accretions of the primitives of the Spiritual Sun. For these primitives are the sole substance that is; that substance from which are all forms created or creatable, in the unseen universe as in the seen, in heaven, and in earth, and in hell.

The two spheres combine. The infinite sphere adjoins the others to itself, accommodates, empowers, and furthers the permission, and adaptabilities stamped upon their structure, When and where finited individuals furnish the sphere of requisite particles like a most fine dust, then and there the infinite sphere of the auras or ethers makes each particle of that finite sphere the centre of a fine vortex of its own, which buoys it, sustains, gives it wings, force, delicate polarity, potencies of mutual attraction, repulsion, combination. This has already been noted of the forces of magnetism and electricity; and it is true of every finite recipient or reactant form.

An agent knows no boundary except from its reagent by which it is determined into prescribed motions and thus into alternations of motions. (*Fibre* 395.)

Passive is associated with active in order that the passive may break and limit the forces of the active body; otherwise powers would not be bounded, they would have no sphere, and hence no form of which quality is predicable (*A. K.* 491, note t).

The human internal, the soul, is a determination, a flow, a vortex of the highest atmosphere of all,—the primal aura. This vortex delineates the human form by a circling and re-circling current,—a current which first weaves a structural image of all the heavens, of all the planes and faculties of human minds, and of all the ultimating bodily progressions; and then strives to round upward again to its source in perfect circle and flow, lifting with it the very mind of man. This internal is the Lord in us,—with us ever, as part of His scheme and will in our creation. It is This that formed us in the womb. It is This that takes the materials carried by the bloods and setting them in human pattern, makes of them a human integrum or whole, ever perfecting, and holds them so everlastingly. It is This that is the immediate influx which

disposes (*H. H.* 39). All other things that are built into the frame of man are infilling substances come by mediate way of old lives and forms,—mother-forms, forms of past ages of social scope and attainments, which are thus disposed to frame quick recipient creatures. This marvellous human form is but partly infilled at birth. Finer and finer, as the way is opened, the sphere of infillings is meant to ascend in the ascent of resolving bloods; and as the ascent is accomplished, so, successively, higher planes and wider ranges of human life are infilled. For thus, and thus only, the higher planes and inner become opened, and are thus given as part of the conscious form; that is, they become membranous or organic. This human internal is the life formative and reformative; the human spirituous fluid; the most universal blood or essence of Swedenborg's physiological works. It is the soul the omnipresence of which in the body is used to illustrate in correspondent image the Lord's omnipresence in the universe. For

The soul is everywhere omnipresent in its body and can so govern all the internal organs and all the thoughts and whatever belongs to the man,—all which are so highly diverse,—that all shall fitly cohere. And by its omnipresence in all and single things of the body it can exercise providence; without which providence all things would fall to ruin in a moment. It acts from an end, and because it is the inmost of man, therefore, it is the Lord alone who, by its means, exercises providence (*S. D.* 4016).

This is the human internal above the highest heaven, which man can never lose even though he were a devil in hell (*A. C.* 1999); which receives in its bosom the Divine Essence directly and not by influx of derived or correspondent planes; which gives to human forms the title of man, imaging in little, the form and name and circuit of forth-going and returning life in God-Man the Lord. It is this which forever holds all things committed to the embrace of its circuit,—whether in ranges of heavens or of hells,—even as the first aura itself, of which this internal is part, holds in its golden zone heavens and earth, alike bound as one and clasped together to the bosom of the all-creative Father.

THE ANIMAL BRAIN AND THE ANIMUS OR ANIMAL MIND.

When the incitements of its bloods and loves are exercised the animal cannot refuse,—it is helpless and must follow. It is the prick of the blood that excites all its wits, its states of brain, its revival and new ordering of past sense-images, imaginative memory. As the blood, so the wit, the instinct, the intuition. The changing quality, state, nature of the blood, literally incites, stimulates, forms, and reforms the desires, passions, affections of the animal mind according to their own image; and as its desires is, so is its sight, its insight, its perception. Even the facts of external sight are subordinated to this or deeply qualified by it; nor is the sound of this a new thing in the laws of the New Church truths; it is a common law that as is the quality of the love, the affection, the blood, so is the quality and feature of the form, the organ of understanding and perception which the blood builds as consort and complement. Often have we read the story of how the heart builds the lungs, the affection the consort perception, and the will its own understanding. And the formed understanding purveys to its parent will; for they are as to esse consubstantiates, and the conatus of their substance is also one. Kingdom to kingdom they are complementary; they look across to each other reciprocally; like excites like; like solicits like; like creates like; deep calls into deep. The power of the infilled ultimate even as against heaven, lies in the meeting and mating of the two consort kingdoms. Its plane is the plane both of guardianship and of attack, since it alone is the plane of full actuality. The celestial kingdom and the spiritual here meet and consort whether for heaven or for hell. Moreover, offspring actualities result. In animal creatures who are in the order of their life gracious is the guardianship, the leading, the modification of state which God here exercises, even to the life of the little sparrow who does not live nor love nor fall without the Heavenly Father.

It is well to be remarked that all the will and actions of animals,—we mean all the instinct—are excited either by those things that excite their sense or that affect their blood in a general manner. The changes and conditions of the air and ether recurring with the four seasons

sends heat into their fluids which burn and boil accordingly; and, with the fluids as determinants, a corresponding change is wrought in the organic forms of the body and the brain. In this way the principle of motion is at once excited, and animals are carried agreeably to nature's order into rational-seeming effects involving ends. Hence their loves, hence the periods those loves obey, hence the wonders they display in building their nests, incubating their eggs, and hatching their young. . . . Hence their public consultations as to the manner of providing for themselves and their progeny in the coming of winter, and a number of other effects which proceed from a soul like theirs accommodated to the reception of life . . . whenever it is excited (2*E. A. K.* 347).

The animal mind is affected the moment the blood suffers: and the blood is affected the moment the animal mind suffers . . . so that animal nature would seem to have fixed her place of abode in the blood, or designed to open an inward communication through the blood to the shrine of the rational mind, as we may see in the case of animals, since it is evident that they are led by their instincts to ends which emulate even those of a rational nature according to variously altered and excited states of the blood (1*E. A. K.* 90).

In animals varieties of state are excited according to (a) the objects which strike the senses; and (b) the changes of state in the blood (*S. D.* 167).

Kingdom to kingdom, blood and lungs, substance and form, love and thought, their regard and their power are mutual; for the bloods being active forces cannot but be in a conatus toward determination or construction, and

Always they contrive the form they prepare for the reception of similar activities or forces with their own: nor can they conceive and produce any form except according to the type of their own nature (*W. L. G.* 61, note).

Like forms like, like excites like, and, all the world over on the animal plane, the materia of the blood pricks and stimulates the brain to consort perceptions. For every changing quality of the blood affords a new plane for the particular reception and outlet of the soul,—a momentary plane, a momentary basis, that is a momentary stimulus. This is the angel of the wild things by whom the Heavenly Father leads them, guards them, gives them "as of themselves and their bloods" to exercise intuitions.

There is but one angel for creatures of the wild, but for

man there are two,—one for the kingdom of the blood and desires, and one for the kingdom of thought and truth; moreover, so long as the man lives upon this earth, they are able to act separately. Nay, in an evil man and one bending toward hell, there must also be two evil emissaries, one for each kingdom of hell, to look after the interests of their own kingdom in that man; to conspire together if possible, and, in the counsel of the man's will, to bring in as special pleaders their own affections, states, impulses. For all that of which a man organically consists, both low and high, must come to the great human intermediate and be there represented in state and in form before the choosing will of the cerebrum which alone is as it were the man,—his own governable voluntary and intelligencing.

But after death man's guardians are no longer two; for after death men become as animals on earth are already. As the quality of their life is, so is all their perception and powers without change or appeal; as is the result which had been wrought out through the conjunctive play of the two kingdoms during earth's life where are the flesh and the red blood, so it always remains. As the tree falls so it always lies, eternally for them, for good or for ill. This is their individuation, and thus is formed their limbus, their bounding plane of shape and finitization, life and degree.

These things are of import sufficiently grave to demand more distinct assurances, swifter and more abundant knowledges. There are arcane things here the outgo of which is far and wide. They are vital things, hidden from us because of their nearness. We are unaware of them because they affect us before we see them. Yet the power of the actual experiences of life on earth where the red blood runs; the reason for our being procreated here on earth; the potency of earth's life for self-individuation and self-determination to heaven or to hell by the growth of a middle plane framed to correspond to one or the other,—to a supreme celestial mind or to a disjunct, bestialized animus,—all are folded in this.

In this story of the power of the blood and its infilling particles, is enfolded also the potency of one of the two sub-

stantial factors entering into the formation of the limbus,—the factor, namely, which belongs to the finited organism side,—its selective choice of its own infilling and its own reaction to the internal or to the Lord in it. And we draw near to an inside knowledge of that limbus, the story of which is peculiarly connected with the story of something “taken from the vital interiors of nature;” taken during the time of earthly life, and first taken coincidently with the completion of the circuit of the red blood in an open ultimate conjunction of the two kingdoms of blood and lungs. It is moreover this limbus which defines and differentiates the cutaneous covering of each human spirit for ever. It is this limbus which first begins to be posited or formed on its manward side,—or as to its second or passive factor, its infilling,—when the blood first rounds its circle through the lungs, and the resolved blood, the returning animal spirit, first rounds its circle through the cortical glands of the cerebrum; for then the organic will and understanding existing in those glands, begins to be infilled by effluvia brought by the returning animal spirit, and so becomes membranous, organic, given to man. It is this limbus which, every moment from birth to death,—that is, so long as the blood continues its round from body to brain, from brain through its fibres back again to blood and body,—is changed, modified, differentiated, widened, framed to this correspondence or to that. And when death separates the upper human organism from the lower natural planes; when that mystic lower half of the transcendent round of the Divine Proceeding in outgo to ultimates and return,—embodied in the circle of the alternately compounding and resolved blood,—ceases forever in man, this limbus can never again be changed. It clothes the spirit and stamps its shape as angel-man, or beast-monster.

Moreover, the doctrine and state of the red blood do not concern the red blood alone; the fortune of the animal spirits themselves is enfolded in it. As Swedenborg says:

The science of the blood extends also into the fields of physiology and pneumatology, or the function of the animal spirits. Thus the animus is affected the moment the blood suffers, and the blood is af-

fects the moment the animus suffers; as we find to be the case in mania . . . fever . . . , anger . . . , joy, cupidities, various temperaments. So that animal nature would seem to have fixed her place of abode in the blood, or to have designed to open an inward communication through the blood to the shrine of the rational mind; as we may see illustrated in the case of animals . . . since it is evident that they are led by their instincts to ends which emulate even those of a rational nature, accordingly to the variously altered and incited states of the blood. The reason of this is that the continuity of the fluxion of the liquids of the body is such as is the continuity of the extension of the solids, or parts that cohere . . . and it is a perpetual circle or infinite spiral (1E. A. K. 90).

The steps of this ascent of state and affection, with excitation-stimulus, from the blood to the animus, from the animus to the very mind of will and understanding,—the great plane of the intermediate mind, is given in DISEASES OF THE FIBRE:

Causes in the mind produce those in the animus, and causes in the animus produce those in the blood; or, causes in the blood excite those in the animus, and these in turn excite those in the mind (*Fibre* 502).

Hence a study of the variation of quantity and quality of the red blood and its serum extends through the whole pathology of body and mind (1E. A. K. 98).

Hence the grounds for the statement that “the diseases which are of the blood attack the brain, and those which are of the animal spirits invade the body” (*Brain* 45); and that “with every change in the blood there is a change in the desire of the animus thence arising” (*Brain* 640k, *Soul* 427). Indeed it is one of the basic truths that “the animus is affected the moment the blood suffers” (1 E. A. K. 90).

Diseases of the body usually so inflow into the animus as, for the time, to alter and transmute the state of its affections. . . . The reason why diseases of the body affect the animus is quite evident from a knowledge of the essence and origin of the animus. For the red blood, ever to be resolved, passes into the fibre through the cortex; each cortical gland is a little internal sensory, each containing its own intellectory and from the intellectories taken together, that is, from their affections arises the animus. When the blood is infected with any disease,—and in like manner the purer blood is affected,—while flowing through these sensories it induces in them a change of state

so that the animus is unable to be affected according to natural influx (*Soul* 466).

For the passions of the mind vary according to the states of the blood, and the states of the blood according to the passions of the mind. . . . For this reason we find that man did not begin to exist until the kingdoms were completed; and that the world and nature concentrated themselves in him in order that in the human microcosm the entire universe might be exhibited for contemplation from its last end to its first (1 *E. A. K.* 7).

Since the blood then is an epitome of the riches of the whole world and of all its kingdoms, it would appear that all things were created for the purpose of administrating to the composition and continued renewal of the blood (1 *E. A. K.* 4).

For on the nature, constitution, determination, continuity and quantity of the blood depend the fortunes and condition of the animal life (*Ibid.* 2).

Moreover, in man, considered not as life but as an organic reagent recipient of life, the membranous or concrete organic form which is the individual man—changing, modifying, growing, responsible,—is momentarily qualified as to its nature by the quality of the blood and its serum.

The nature of the concrete parts of the body is similar to that of the blood and its serum; for all the parts of the human organism are fluid before they are solid, and the law according to which they solidify is founded on the law of their action as fluids. (The processes of induration and putrefaction are referred to as confirming instances of this truth, and also the whole pathology of the body and the mind) (1 *E. A. K.* 61).

Hence "all the sciences which have the perpetuation of life for their object," and chiefly the science of the physician, are concerned with the maintenance or restoration of the order, purity, state, health of the blood. The commanding power of the quality or nature of the blood or its serum is so manifested in the general or macrocosmic world of nature, that "every species of animal lives the life proper to the specific nature of its blood; and not only every species but every individual of that species,—every difference, whether of species or individual, implying a corresponding difference in the blood" (*Ibid.* 62).

Every difference of food implies thus a derivative difference of species (*Ibid.* 48, 97).

As respects the microscopic or human form this commanding power of the changing quality or nature of the blood and its serum to stamp consort changes of state, desire, intuition

and persuasion upon the animus has been well noted. That the entire animal plane of the human organism comes under the laws of animal life, and that on that plane man also is an animal is a truism of the Writings even. So true is it indeed that

In sacred and common language all the affections of the animus which come from its body are said to come from the heart; as when we say "With the whole heart," or in using the words *Misericors*, *Excors*, *Vecors** and so forth,—which terms all have reference to the blood (*Soul* 34).

Moreover we have already noted that what happens to the animus is handed up along the lines of ascending human faculty, and excites powerfully the mind of the will and understanding itself (*Fibre* 502); and also that this ascent to the rational mind, and especially to the will thereof, or the organ of ultimating determination, is so direct that in case the two kingdoms of the plane of the brain or cerebrum should happen to coincide in their excitation, their united instantaneous power upon the plane of the mind above would be so great that the will of that mind would be determined directly by these lower motives without even reflection or intuition, or without the power of the understanding of that plane being directed to the subject. For Swedenborg notes that from changes in the blood arise changes in the desires of the animus, and that whenever a change in the blood and the desire thence arising coincide with a strong imagination or thought-image the penetrative power of the conjunct action is even to the will of the rational mind which then determines without a previous intuition or inner view of causes. He notes also that this condition is animal rather than human; and that it is to be warded off and guarded against,—in man's disorderly condition, if man is to be made human, rational or spiritual is implied.

The organs of the higher and lower degrees (that is, of the mind and animus) may act either apart from the blood or conjointly therewith, that is, when a change in the blood and in the desire thence arising, and when at the same time the force of the objects . . . which

*i. e., Merciful, Senseless, Insane.

incite and excite the blood and the ideas, penetrate to the sphere of the rational mind and determine the will without a previous intuition of causes. To prevent this, the human brain, unlike the animal, is so organized as to be able to dispose itself in such a way that whilst it collects and examines its reasonings, the blood cannot irritate it, and if it does excite the brain, still the power is reserved to it to govern this excitement under the advice of reason (*Brain* 640k).

It is along the lines of the conjunct operation of these two powers and common forces for good or for ill, these two organic offices,—sensitive imagination and nutrition,—that men actualize their opening of the higher mind, or their closing of that mind and their opening of the lower; thus grounding themselves, infilling themselves, as sensual forms, animal, fleshy. This is surely confirmed in what is directly said in the APOCALYPSE EXPLAINED to the effect that

Sensual men *here upon this earth* “are in the proprium which draws its delights of life from the unclean effluvia that exhale from waste matters in the body and are blown off from stercoraceous matters. From these comes a swelling of their breast when pride is active; and the titillation of them causes delight. . . . That such is the source of their delights is evident from their delights after death when they are living as spirits; then they love such stench^es . . . more than fragrant odors (*i. e.*, they then still seek out and attach themselves to the like matters by which they were imbuited and stimulated while upon earth). At the presence and touch of such stench^es (spheres) the interiors of their mind are closed, and the exteriors which are of the body are opened; therefore they are crafty and keen in worldly matters . . . and love rule (*A. E.* 1057; see also 659).

Nor need we cite further along the general lines of the influx of the animus and its affections into the blood, and of the converse power of the affections, changes, and diseases of the body and blood to act into the animus, the reason of which, Swedenborg says:

Is evident from the well known essence and origin of the mind; for the red blood about to be dissolved passes over into the fibres by means of the cortex, each cortical gland being an integral sensory (*Soul* 462).

The red blood . . . contains in itself the purer blood which is the same as the animal spirit and which breaks forth from the red blood, and is transmitted into the cortical gland, and thereby into the

fibre. The cortical gland is affected according to every nature of that fluid which courses through it and is thereby transferred to the fibre. It is scarcely otherwise than as sight is affected by every variety of the modulations of the air; taste by every variety of the parts which touch the fibrils of its organ; and so also smell. But in the cortical gland the effect is more sublime, because its sense is purer, superior, more perfect, as also are the substances and forces which affect it.

The cortical glands in particular and the brain in general undergo infinite changes of state according to all the cause and variety of forces and of forms which inflow and by which they are affected. As is the state of the brain such is that of the animus in the brain; and as is the state of the cortical substance such is the state of the mind; and when the soul flows into this it can operate only according to its state; just as the nature of sight is according to the state of the eye.

The cortical glands are most highly exquisite senses, since taken together they are the internal sensory; they undergo accidental change of state according to every cause and variety of the forces and forms which flow in; or, they are affected according to every nature of the perfluent fluid (*Fibre* 477-479, 503).

The resolved red blood passes into the centre of a cortical gland and from thence is expressed down the venous fibre, like as the venous blood passes into the hollow centre of the common heart and from thence is expressed along the aorta (*Fibre* 137). Sense images, imaginative images and thoughts, are wave undulations, creepings and motions of the parietal substance of the gland,—just as we should imagine wave motions, bendings and changes of form to be impressed upon the walls of the structural heart by the extraneous motion of the lungs or the air, the walls of the heart being imagined as self sensitive and self determinative.

In the cortical glands the animal spirits resolved from the globules of the red blood are joined for vivification with new spiritual essence and conveyed downward by the fibres (*S. D.* 914, 831).

The body itself is a substance by itself because the blood is a substance distinct from the spirituous fluid . . . nevertheless the blood is the ultimate destination of the said fluid. . . . From this description of the body it may be seen that there is an intercourse between the red blood and the spirituous fluid,—an intercourse by mediation of the purer blood (2 *E. A. K.* 301).

The will of order is that the red blood, *i. e.*, as to all the effluvial spheres and nutritive particles which it carries, shall be so purely correspondent to the first essence or the soul, that in the cortical glands

of the cerebrum "the lowest or last essence may pass to the supreme essence and enter into intimate and absolute union with it; then the middle essence proceeds from both" (*A. K.* 520; see also note n, and 519m).

And all this to the end "that a purer blood or animal spirit may be formed, and thus the red blood; that is to say, that things material united to this spiritual may become effective so as to act one unanimous life (*S. D.* 831).

It is the spiritual united to the material, as a living force with a dead force, that makes man to speak rationally and act morally. . . . Man is a rational being by virtue of the union in him of things spiritual with things natural. . . . Hence it is perceived that the spiritual and the natural united in man make him to live a spiritually natural man (*Influx* 12, 2 *E. A. K.* 235).

In our Lord alone was this perfectly done. In Him the red blood or human essence was reciprocally and infinitely conjoined to His Divine Human spirituous fluid. Hence is His Divine Essence.

That the rational mind can be formed only in man, is because all Divine influx is from firsts into lasts and by communication with lasts into intermediates. . . . This was the reason why the Lord came into the world,—that He might put on a human body and might there glorify Himself so that He might rule the universe from firsts and at the same time from lasts (*Div. Wis.* viii, 2).

With the Lord alone was the correspondence of all things of the body with the Divine most perfect, that is, infinitely perfect. Hence was the union of corporeal things with Divine celestial things, and of sensual things with Divine Spiritual things. Thus He is perfect Man and sole Man (*A. C.* 1414; see also 1432).

It is literally in this intercourse between the human spirituous fluid and the red blood that the plane of the rational mind of man is formed. The two bloods enter the cortical glands from opposite directions, and it is at that point in each gland where they meet, and according, moreover, to their mutual relation and living together in that gland as in their marriage bedchamber, that the mind is formed. And according as the one blood or the other rules, it is formed either to the image and obedience of the spiritual, or as a slave to the delight and licenses of the sensual.

This purer blood which glances through the little chamber of the corculum or cortex partakes of the body exactly so far as it partakes of corpuscles borrowed from the three kingdoms of the earth. Now this pure or middle blood is actually the spirituous fluid tempered by the volatile ethereal saline particles. Hence in proportion as this blood which flows through the cortical substances abounds in these particles, in the same proportion does this substance, and consequently the mind, partake of the body. Thus the more unclean and gravitating the intermediate blood, the more corporeal in itself is the mind, and the more is the *vis operandi* of the soul infringed on and dulled (2*E. A. K.* 305; see also 306).

Since the mind is formed by and according to the intercourse between the human spirituous fluid and the red blood in the grey cells or cortical glands of the cerebrum,—its infilling being with substances carried by the blood in the ascending stream,—it is clear that rational minds, either the angelic or the demoniacal, can be procreated and formed only upon the earth during the course of the natural corporeal life (*Div. Wis.* viii, 2-4). The cortical gland is the highest plane in man to which sensations from the outer world and its nutritive (or poisonous) substances can arise. Everything rises so far; nothing farther (2 *E. A. K.* 191), save by the mind's own new generation in its own cortical glands by co-action with the primal aura, in interior meditations and wills, the sphere of which can build up and open even to the very celestial plane.

So much man has in the plane of his animal life in common with all animals as regards the great laws of order and action belonging to that plane. But in animals the plane itself, its joys and efforts, and the ultimating services of body and sphere going out from that life are "their own excuse for their being"; while in man the life of his animal and corporeal plane,—that plane which as to its laws, processes, uses, is the same as that of animals,—passes directly to further uses and higher,—uses to him personally as a human being or organic recipient; uses which work out for him according to the simple laws of infilling, to make a form of eternal weal or of woe. For "if you extract from the blood its terrestrial parts, and from the animal spirits its purer parts of the same kind, there re-

mains nothing but a form derived from the determinations of the soul,"—human spirituous fluid (*Brain* 83). And the human spirituous fluid is not ours but is the organ and medium of the presence and operation of our Lord who alone is Man (*A. C.* 1894, *S. D.* 4016). It is as the spheres ascending from the exercise of the corporeal and sensual life,—the spheres of the completed rounds of the blood—come into intercourse with the soul and lend themselves concordantly to fill, infill and be mated to its curves and flows, that the soul is,—so far and in just such form,—appropriated to the man "as it were his." His human internal is the "heir" (*A. C.* 1802) of all promises,—that by which men become sons of God; or, of which they say, This is the heir, let us kill him.

The heir of the Lord's kingdom is not the external, but it is the internal; the external is also heir, but by means of the internal, for then they act as one (*A. C.* 1802).

From head to heel the soul, the life of God-Man in us, delineates all the form of man (*A. C.* 1904; *Soul* 155); that is, (a) all the forms of his highest mind established in the Divine celestial,—the Sarai, consort of the internal (*A. C.* 1469); (b) the hereditary beginning—forms of his intermediate mind, offset of the father's intermediate mind, voluntary and intellectual; and (c) his sense-organs, viscera, blood and body, and all those lower forms which are infilled for us in the mother's womb from the nutrient and effluvial stores carried by her blood. Then the child is born; and, coincidentally, then is opened the ascending completing circle of the blood through the grey cells or cortical glands of the cerebrum; and then begins the intercourse of the human internal with the resolving red blood returning in the cortex of the cerebrum. According as that intercourse is,—as body and blood modified by the experiences of life continue to act the mother-part, one which now is governable by the voluntary and intelligent plane of the cerebrum,—so the mind is builded. As the bloods bring spheres, nutriment, corresponding with truths and higher truths, so the spiritual intermediate mind can be built into correspondence with the highest mind. And as that correspondence is evolved, the celestial mind adjoins itself with the

intermediate mind with joy, since the way is opened and in-filled (*Soul* 155). The "bride has made herself ready."

THE HUMAN MIND AN INTERMEDIATE, IN EQUILIBRIUM AND
WITH FREE WILL.

The brain of a man, his animus or animal mind, differs from that of an animal in certain organic powers and adjustments provided of the Lord's mercy, which permit him to govern, to use, to refuse and act against the incitements of this lower plane; to use it and not to be used by it. And man does this if his growing cortical glands have had stamped into their habit of action, principles of truth; and if their self-determination hold to the form of those principles,—even though with effort and strain,—when an influx and incitation comes which excites other and counter modifications of their sensitive form. For in the human subject, different from the animal, the animus, the cortex, the internal sensory itself, possesses the power to change its own internal state, or rather, it is able actually to stand against and resist recognized incitations or excitations to changes, or, on the other hand, to coincide with them and yield to them with joyful reflex and endeavor (*Soul* 170).

The ideas of memory, imagination, thought, are all changes of state and form in the sensory and higher mind.

In the mind this faculty of changing its states is that in which intellectual power and action consist. . . . Liberty consists in producing changes of state in the sensory and consequently in the intellectory (*i. e.*, in the higher and lower mind), or in putting on states which are agreeable to this end or to that. For we can turn our thoughts to whatever side we please; and into that universal state in which we fixedly hold our mind, no other ideas can enter than such as belong to it. . . . Thus as is the state of the mind such are the ideas that inflow, such is the form born therefrom, and such the affection of that form, that is, the love. All other things which are not agreeable to that form are either not admitted, or are turned aside; or, if they are present within, they are expelled; in a word, they are rejected as heterogeneous and as destructive of that form (*Soul* 357-358; see also 396).

Thus the human brain, (the cortical glands of the cerebrum), has the power of self restraint from action (1 *E. A. K.* 646).

The freedom of these glands lies in the fact that they are able to obey or not to obey the higher human intellect (*Soul* 398).

The human brain has the one, the gracious faculty, liberty, the liberty of an intermediate,—

A liberty of acting, relatively to things inferior; a liberty of suffering oneself to be acted upon, relatively to things superior; from both which results a liberty of disposing oneself to be acted upon (1 *E. A. K.* 610; 2 *E. A. K.* 317, 327).

It is radically otherwise with animals; for their brain or cortical glands cannot refrain from being affected and carried into its determinations by the changing stream and quality of the blood (2 *E. A. K.* 342, 344).

What is the difference which gives to the human cortical gland power to yield or to refrain? power which the animal cortex does not possess? It lies in the fact that in animals the cortical gland is not an intermediate plane, but is the highest thing in them. Their soul or formative substance is on one and the same degree as this organism; that is, it is on the degree of the second aura of the universe (2 *E. A. K.* 338); the degree of our minds (*Ibid.* 341; *S. D.* 2770) or the plane of superior nature (*W. L. G.* 61, note).

Only that organic plane of recipient is in equilibrium which is in an intermediate position,—a position receiving influx or pressure from two different directions and degrees. Only a plane of this position is capable of freewill; of self-determination, of self-direction or self-turning freedom, or even of self-determined attention to variation of state or to the refusal of such variation. The law here is the same as that of the PRINCIPIA: That the equilibrium and elastic reactive power of any form depend upon the form being so conditioned that it is acted upon by equal pressures within and without (*Prin.* I, vi, 5).

In man, the cortical gland mind is not the highest thing; above it is the soul or human spirituous fluid, together with its consort intellectory—Sarai (2 *E. A. K.* 289-291; *Soul* 350; *A. E.* 1224). Therefore the cortical gland mind occupies the place of an intermediate. Moreover, it is in a true equilibrium, since the determination of that which is higher, more

living and finer is directed toward it in a direction opposite to those determinations which are directed to it from the blood and senses. Thus we may think of the human cortical gland as a cell "played upon from two directions" (James' *Psychology* I, p. 441) ; or, as the Writings say, there are two ways into the rational mind of man,—one from above, one from below.

Thus placed in the veriest centre between the acting and reacting forces,—the Lord and the soul, or the human spirituous fluid and its intellectory, on the one hand, and the world and the blood with all its nutritive spheres or return atmospheres, on the other,—the mind has a power of self-determination. Even its little self-effort can act as the effectual hinge determining which way its well poised door shall turn. Since the will, the self-determinate power, resides in the intermediate mind

in the veriest centre and concourse between the superior acting and the inferior reacting forces,—the soul acting upon it from above and the spirit of life acting upon the soul ; the animus acting upon it from below and the body upon the animus ; showing that the mind holds the fulcrum of the balance (2 *E. A. K.* 323).

Thus our mind, the mind of the cerebral cortex, is a centre of operations (2 *E. A. K.* 346).

In the brains of animals, moreover, the blood ascends from the heart to the brain by a comparatively short and straight way, so that if the heart beats more strongly and feverishly than normal the impulse, throb, beat thereof takes possession of the very brain in whose sensitive substance all its impulse must be repeated. But in the human brain the passage by which the blood ascends to the cerebrum is long, and it is curved back and forth ; so that however fiercely the heart may agitate itself, its throb is broken in the blood in its passage along the bending channel of the carotid artery ; and to the human brain is left the choice and power to obey the soul, to stand against the blood by refusing to invite its entrance by coincident animations, and thus to hold itself free to act according to order, according to its own imbued principles and practices, to make a stiff effort not to be moved from these habitual principles.

To the human brain is left the right and choice of excluding the impure blood and particularly the red blood, and even of warding off the middle blood from these purest chambers, so long as the mind is viewing its reasons and involving and evolving them; for all this time it . . . almost constricts the cortical substances, consequently inhibits the transflux of this purer blood through these middle cavities; that is to say, every time it desires to be free from the sensations and forces of the body (2 *E. A. K.* 305; see also 67).

This is the brain's "as of itself" effort, its supreme freedom, its power and self-compulsion. To this effort the Lord in the human internal or soul, is instantly assistant; He brings consort nutritive spheres to sustain the brain; and by this infilling He thus actually appropriates to the man the very love for the sake of which the organic cells of the mind-brain have stood in patient resistant tenseness.

Thus the Lord's mercy still keeps the balance by a perpetual miracle of immediate influx through the soul, in order that the voluntary will may be as of itself free, and therefore may, as of itself, deflect, determine, and, thus growing, may acquire lines of habitual action, may imbibe nutriment in consort with its lines of effort, and may appropriate to itself human life or animal, according to the ideas and images made part of its habitual intentions.

All this does not change the laws of the animal life and mind in man; it does not prevent the changing qualities and states in the blood,—the changing character of the substances carried by its stream,—from inciting desire, impulse, intuition, persuasion, in the cortical gland. It adds the element of full responsibility in the human being for the use of the lower plane and power for service, for the infilling and opening of the higher plane-mind. It adds the element of responsibility also to the intermediate and sensory mind,—responsibility for the way itself is developed by the habits of action, truths built in and habituated, or not built in; responsibility for its own gradual growth and formation into forms correspondent with the things of the celestial heaven, or of the genii hells. To this plane of the mind has been given the power of shaping its own heredity, its own spiritual body,—its shaping to the eternal life, while it is actually co-working with the Lord in

governable ultimates, in this earth-life of the red blood,—the animal spirit of the sensory and imaginative in the plane of interior reflection and preferred recollection and delight.

SUMMARY. OFFICES AND EFFECTS OF THE INFILLING OF THE
ATMOSPHERES BY THE VOLATILE EFFLUVIAL SPHERES
GIVEN OUT BY THE KINGDOMS OF NATURE.

The service of these effluvial spheres to the active atmospheres is universal. The active atmosphere cannot produce itself in actual form in the world of effect without adjoining to itself as it were a consort from these effluvial and infilling spheres. Organic forms cannot be formed without such adjunctions; for the active or atmosphere, without the passive or effluvial sphere, is as it were a something unfixed, unpermanent, indeterminate. Activities cannot be bounded, nor can organic forms give off spheres, save where forms have been framed wherein active and passive atmospheres,—aura or ether, and effluvial spheres,—are united in one bond of use.

This is to be seen as holding good in the three great provinces of uses. *FIRST.* The forces of nature, magnetism and electricity are illustrations of the law. *SECOND.* It is in these stores of floating effluvial particles, which are the primitives of all physical immaterial composition, that the simplest forms of animaculate life take origin continually. *THIRD.* All organic forms whatever are, as it were, intermediates or offspring in which the aura or the ether unites to itself such effluvial or infilling spheres according to determinate order and pattern. This is the law of the composition of intermediates, or the law of Benjamin; the law, namely, that all organic intermediates are formed by 1. an active or father-formative which is a loan or offshoot from the degree above; and 2. the effluvial sphere given off from an organized subject of a lower degree as a passive or mother. The first constitutes the *esse* of the Benjamin form; the second its *existere*. Moreover the general infilling or impregnation of the atmospheres by the volatile effluvial spheres is necessary for all vegetative growth, and without such spheres the ether, which is as the very soul in vegetable seed, could not be unfolded in growth.

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BY LILLIAN G. BEEKMAN.

V. THE OFFICE OF SENSATION.

GENERAL VIEW.

Nutrition is an office pertaining to the celestial kingdom specifically. Sensation is an office of the spiritual kingdom specifically.

I scarcely need to repeat the fundamental laws, yet perhaps some slight resumé may be in place. The celestial kingdom and the spiritual kingdom of the Lord have perfectly distinct ultimates, structural bases, correspondents,—whether in macrocosm or in microcosm. In their respective uses and activities relatively to the organic human natural of man, the Lord adjoins the celestial angels and the spiritual angels to a different, a quite distinct organic basis or ultimate in the human form.

THE ORGANIC BASIS PECULIAR TO THE CELESTIAL KINGDOM.

The corresponding ultimate body and terrestrial foothold of the celestial kingdom,—heaven or hades,—is, in general:

(a) The actual nutritive substances and volatile spheres of the macrocosm.

(b) The bloods or the imbibed spheres and substances, as respects the province of nutrition; also as respects the action of the heart.

(c) The cerebellum and the interior viscera of the body, with their system of sympathetic nerve and involuntary muscle, and the office of secretion and excretion.

This celestial kingdom is by far the more universal kingdom. Its domain is widespread, everywhere present. To it belong the very substances of the soil of the earth and of the volatile spheres given off into the atmospheres. To it belongs the vegetative kingdom and the vegetative plane in animal creatures. It is able to find its full active basis in the embryo in the womb. And all the unconscious processes of organisms are a reactive basis of its own conscious self and conscious action. What is unconscious to the organic creature *per se*, is the very basis of presence and consciousness and use or operation for the celestial kingdom, that is, for societies of the celestial kingdom in their association with and use to that particular organic creature.

In sleep *it* does not sleep, nor does the organic basis or ultimate of its action become quiescent,—as does the organic basis of the association and use of inhabitants of the spiritual kingdom.

It is the kingdom where God the Lord establishes all His beginnings. By its instrumentality He initiates things,—from the initiation of new solar systems, to the initiation of new human forms conceived in the womb. It is the kingdom He adjoins to Himself as the kingdom of substances and essences, while, in womb and egg, He is weaving structural forms or organic recipient creatures,—forms and organs to be infilled and opened later for the uses of their own life. It is the kingdom which reigns alone, awake indeed, while in sleep the Lord knits up the ravelled sleeve of care. It is the kingdom of the Weavers. It is the kingdom of the matrix, the kingdom of the encompassing and sustaining Higher. In it is the profound abyss, “the deep which coucheth under,” where the “mothers” dwell, and where Faust sought successfully for the revival of forms of past generations. It is the kingdom of the very hand of Jehovah as the Former from the womb.

Again, while its office, its end, is the building, the sustaining, the perfecting of organic structure, it possesses special excitant powers for the voluntary and intellectual. For every particle of its substance,—in the shape of a fine sphere, which,

carried to the brain in the afflux-stream of the blood may come in contact with the organic basis of the other kingdom (that is, with the cortex of the cerebrum),—is able to excite therein an explicit sensation, a sense-idea and desire, stamped after the image of the specific quality of the exciting particle. Thus it announces itself to the cerebrum by the name and feature, as it were, of the desire and imaginary image it has power to excite; and it knocks at the cerebrum for welcome, entrance, place of permanent lodgment; and, so knocking, is subject to refusal, and rejection among excreta, if the cerebrum does not incline, does not yield. By heated oppositions of that cerebrum, it may even suffer possible vibratory shaking to the point of actual disruption and dissipation into its component finites or vortex-rings; for such an event seems among the organic possibilities.

Moreover, everywhere throughout the body universal, all these nutrient particles, whether of spheres or of salts, as they are carried in the living blood-stream, are kept in a perpetual stream of fluctuant motion. For, continually, they are being, now thrust into the tissues, now taken out and eliminated; now added to, and again changed, at the will and wisdom of the impelling soul and life in the bloods. This process performs another great use. The jar of this perpetual change and exchange of the infilling dust,—particles of nutrient spheres,—in the tissues, excites the physiological and organic heats. So long as life in the body lasts, these infilling particles have uncertain tenure of place,—are infirm. Yesterday's infilling may be shaken loose to-day, and be replaced by better,—or by worse. And indeed, all the infilling particles, the body,—derived at first from the mother's blood and, after birth, by increment of that nutrition which the man's own blood procures to itself,—may be wholly put out, exchanged for another. And continually the blow and jar of the perpetual exchange is an external and exciting cause of physiological heat operative throughout the natural life (1 *E. A. K.* 81, 83, 93).

The heats and their derivative "lights,"—or the ripples of the vital fluids called heats and lights of the body and the

animus,—that come in upon the intermediate, the middle mind, by way of afflux of body, blood and animus, are produced thus, that is, by the contremiscence and blow of these infilling particles which, as the transcendent circle of the human blood performs its rounds, are being endlessly thrust into the tissues and taken out. These contremiscences and blows, pushing and thrusting at them from outside, excite oscillatory motion, rotary motion, in the spherical bullular leasts of the more vital plasm.

The heat-oscillations thus excited in the quick, spherical and bullular forms of the sensitive tissues or protoplasms, are of degree and quality in direct consonance with the degree and quality of the exciting particles. Hence it comes, that these excited heats are of different qualities and of several degrees. It is this excited heat,—these heat-oscillations set up in this exterior manner,—that everywhere first expands, excites and opens such organic forms and fibres as are of commensurate degree, and which, in bent and arrangement, are natively receptive of, responsive to, reverberate to, stimuli of the given degree and individual quality. Hence it is that “opening” and “infilling” of planes of mind or body are always mentioned together, and associated as sequent upon the action of these excited heats according to their degrees and quality.

One thing more. Wherever the substances of this kingdom go, whether they be ponderable masses or volatile spheres, there, according to their quality, their form, go also the genii and the celestials adjoined with them, according to their quality and form and power. And since, upon our earth, the store of volatile spheres given off in the course of ages into the interstices of the aerial elementary and æther to be the nutritive or “mother” element or body of the middle blood (animal spirit), is so preponderantly of the wrong isomerism and is so contaminate (see above, p. 100 *seq*), therefore the Writings note that the way of afflux is the path which infesting hells use for attack upon the mediate mind of man.

Thus the uses, the offices, of this kingdom are wide; its

potencies are subtle and great indeed, and its structural bases, its terrestrial ultimates and correspondents in creation are so numerous, so varied, so everywhere present, that it would seem at first glance that this kingdom covered all the ground there was. Yet, despite this fact, to the cerebrum and its science, this kingdom is perhaps the least of all known as to its powers,—even as to its touch and presence.

THE ORGANIC BASIS PECULIAR TO THE SPIRITUAL KINGDOM.

The correspondence, the terrestrial basis, the organic exterior or body, of the spiritual kingdom is far less universally present in creation than that of the celestial. It is practically confined to the grey matter of the cerebrum, or to the volitional (voluntary) and sensitive-perceptive (intellectual) tissues of living creatures; and its special subjects, even in these tissues, are not so directly the tissues *per se*, as the various sense-images, imaginative- and memory-ideas experienced in the tissues. These sense-images, images of imagination, it must be remembered,—and also memory-ideas themselves as well as thoughts,—are in their actuality, nothing but various modes and patterns of modifying, undulatory, crawling, extensory, contractile motions, taking place in the substance of the grey cells,—amœboid motions with inner tensions and releases (whether produced passively or actively) together with their volitional potencies of rhythmic contraction and expansion.

“Thoughts are changes and variations of the forms of the purely organic substances of the mind” (*D. P.* 279). This is so continuously and variously said in the Writings that it is hardly worth while especially to quote. In the INFINITE and the ECONOMY, it is in almost every chapter.

That the spirit of man, being an organic faculty and form, is extended, see *S. D.* 3470, *D. L. W.* 373.

“The will is, in fact, the conatus of action, but the determination is effected by a species of motion in the organic beginnings of the brain; namely, by expansions and constrictions. These organic beginnings are most subtle parts in the cortex of the brain. When they undergo changes or variations of form, then, in order that

these may be brought forth to act, they undergo alternations of expansion and constriction. The general motion of the brain is expansion and constriction, and thus also the general motion of all the parts" (1 *Ad.* 990).

Action is the determination of the will, and these determinations are affected "by expansions and constrictions of the cortical glands whereby the animal spirit is expelled into the nerve fibres, and further into the motor fibres of the body, whence stands forth an action such as was in the will" (*Soul* 394).

"The will is rational conatus, and it has with itself this nature, namely, that it wills to expand the little sensories,—but determinately to the form of the action. It is asked then, How is this physically carried out in the common sensory? or, What is the change of state in the sensory when the mind is in its will? It is not such as it is in the ideas of its intellect which are so many changes of state. In the will and its loves and desires it is quite different; that is to say, in the determinations of certain sensories which it wills to expand, and to produce its actions, some weakly, others strongly. Hence stands forth the form of the forces which is similar to the form of the modes, that is, to the modifications consisting, as it does, of mere conatuses of expanding its glands. Thus the will can exist and subsist simultaneously with and also separately from the changes of the intellect" (*Soul* 396, *Fibre* 475-9, 520).

This basis of correspondence is not even opened and initiated so as to come into actuality, until after exclusion from the womb takes place. Moreover, it becomes quiescent during sleep and in all unconscious states. In man it is characteristically very rudimentary at birth, and in each individual man it receives its increment and growth, the bent of its new fibres, the evolutionary conditionment and quality of infilling particles, by the experiences and exercises of life and education peculiar to that man. Thus it differs in all men; for in no two of the human race will these conditions of its development and their result be identical. Each man's surroundings, sense-experiences, education, circumstances of Providence, and personal exertions with accumulative result of those exertions as habit,—all these condition the development of these tissues, and their literal form in the bent and scope of their sympathetic life; so that in each living creature

inevitably the grey cell is stamped to different personal form and feature and capacity.*

This, moreover, is the plane where man as of himself is able to co-operate with the Lord in a continuance of that work of formation which is as it were but begun when he leaves the mother's womb. This is indeed the most interior plane to which the effect of the co-operation of man can extend,† so as to be able to affect the growing form of his own organic structure; to produce and leave lasting organic stamp of its own personal experiences and determinations,—a stamp lasting for the man's personal eternity as a personal finitization, specialization, bounding of the man's quality and power, for the forever. It is handed down also for the heredity of the man's offspring.

No harm that he can do here can reach to, extend to, his own higher planes. "The inmost mind and the interior are not man's but the Lord's; what is man's is the natural mind" (*S. D.* 3474, 1827; *D. L. W.* 256, 261). All harm and all good that he does on the earth-life is made permanent in this plane; for he takes its finer portion with him into the other world (*D. L. W.* 257, 270, 273, 388; *T. C. R.* 103; *D. P.* 220; *S. D.* 3578; *H. H.* 501; *Brain* 83; *2 E. A. K.* 283, 301, 305). Thus its state forever conditions his actual possession of his

*Note well also, that as its own stamp is formel, is infilled and becomes actively organic, it gives off into the interstices of the atmosphere of the universe a radiant sphere of infinitesimal particles which are all stamped to the very same form and quality.

†In man,—the organic tabernacle—this mediate organic plane stands as the Holy Place. If, in the course of man's life, it be framed as a holy place indeed, then the sphere given off by the tissues is as the rising incense.

And when the High Priest,—the offset of the Divine Proceeding or inmost essence, the Lord's own abiding place in man's form,—shall be able to ascend through this Holy Place even to the Holy of Holies,—the pure or celestial intellectory,—somewhat from this organic sphere will be carried in the High Priest's hand into that Holy of Holies, infilling it also. And then it will, as it were, "pass into the man to be his." This is the first moment and breath of the new birth. Then only does man begin to be verily man.

own higher organic heritage and his appropriation of life and of wisdom; for this is that tree which, as it is grown or not grown, so at death it falls; as it falls so ever it lies* (*S. D.*, Min. 4645; *A. C.* 4588).

Moreover, what he does here, what he develops and infills in this plane of the cerebrum, affects the inheritance of his offspring. If he breaks and modifies his own perverted heredity here, then all that modification for betterment is transmitted in the very inclination of the lines of substance of that plane of the seed going out from him for the creation of the new generation. If he adds to the perversions bequeathed him by his father's seed, then that added perversion, in its rudiments, carries over to his offspring as actual structural perversion in the very begetting seed.†

This plane is for the most part infantile, and even embryonically rudimentary, at birth. Its formation is appointed to be finished after birth. From the hour of exclusion from the womb to the hour of exclusion from the earth-life by death, the growth, formation, alteration, in this plane of the grey cells of the cerebrum goes on; and every instant change is registered in plastic formation.

With infants the cortical receptacles of the will and understanding "are soft and tender; they afterwards take increase and are perfected according to knowledges and the affection thereof; they are

*But for the infilling particles, the nutrient and effluvial spheres, carried up into this plane by the bloods in their return or afflux stream,—the stream of their ascending resolution,—the man, the organic form of the mind, would be but like Hans Sloan's heavenly bird, an unpermanent, unfixed form, unable eternally to abide (*D. L. W.* 344, *D. Wis.* viii, 3-4, *S. D.* 5552).

See a later paper or discussion of this point, and a statement of the offices played respectively by the human internal and this in-

filled mediate plane of the voluntary and intellectual (cerebrum) in effecting the immortality of a man; together with the relation of the first effort toward breathing, in infilling the inmost of the units of the mediate mind.

†It must not be overlooked that three degrees are structurally involved in every seed of man; and that the lowermost alone of these three has been injured by the fall of man (*A. E.* 1224, *D. Wis.* iii, 4, *D. L. W.* 432, *D. Wis.* v, *S. D.* 5552).

integrated according to intelligence and the love of uses; they grow soft according to wisdom, and they are consolidated and grow hard from the opposites" (*D. Wis.* v).

Moreover, the finer part of the actual natural substances involved in every increment of this grey cerebrum tissue and affected by every experience of its life, is actually withdrawn at death and remains as part of that man's organic body and faculty forever. Thus the results worked out by the man co-operatively with the Lord during this natural-life epoch, are everlasting; for within this epoch are given the stamp, the form, the potency or capacity, the curves of personal inclination, which will characterize that man still when he is born into the after-death life.

It might also be termed the period of a second gestation during which the man, that is, the man's cerebrum, is conditioned and empowered by the Creator so that by his own cerebral activity he is enabled to determine, to set limits to, to finite, the scope and direction, the amount of growth and the form thereof, of a certain mediate organic principle or mind, inmost natural, in these grey cells; and according to the quality of this, is qualified the compounded or mediate essence,—the white blood,—proceeding from a sort of animal spirit or middle soul acting down into the planes below.

Thus the man himself, that is, the grey cells or cortical glands of the cerebrum, small at birth, are yet endowed with fundamental potencies of action, of inhibition, of reciproca-tion, and also of elastic reaction and passivity; with potencies of self-directive election or free will along all lines involved in their own substantial structure.

"Liberty consists in producing changes of state in the sensorium and consequently in the intellectory; or, in putting on states which suit this or that end. For we are able to turn our thoughts to whatsoever side we will, and into that universal state wherein we fixedly hold our mind no other ideas can inflow than such as pertain to it" (*Soul* 358, *A. E.* 1151, *Soul* 357).

And as their substantial structure literally grows and is in-filled by self-exercise and along the lines habitual to the exercise, this in the long years involves a man's conscious sen-

sitive goverance and responsibility for the very lines which shall define, finite, his faculties for the next world. For it is exactly this substance and structure constituting the mediate plane of the human organism, which defines the shape and aspect of that man's visible spiritual body to eternity; since it is exactly this, which, as to its firmer inner portion, infilling and all, the human internal carries with it, and raises with it, when that human internal withdraws entirely from the natural human form on the third day after death (*T. C. R.* 103).

Moreover, to all eternity, the currents of the human internal continue to sustain it, to give it life, to empower it, to hold all its scattered parts and particles coherently as one, and to be very intimate presence, operation and providence of the Lord Himself in, about, and to it,—whether itself have formed itself during the earth-life to a heavenly and full or to an evil and broken form. Thus man's heredity for the next world is defined by two factors: What his parents gave him, and what he has done for himself. This therefore defines his spiritual body, whether it is to be normally human or a monstrosity; the very shape he will bear to eternity, he himself shapes here on earth; and the inner structure of the spiritual body as to the very bent of its lines of fibres will modify the glance of his eye and the work of his hands forever.

In this plane were those accumulations of heredity-perversion which effected the fall of man. Literally, in this plane of the inner sensual organic, the limbus, plane of the mediate mind, the perversions were registered; and in the outermost degree of man's seed. In it and in its exterior is man's proprium (*S. D.* 5464). Therefore, it was here, where the fall was effected, that the retrieval must be; here, where is the old wound of the race, must that wound be mollified with oil and bound up.*

*In the tabernacle of the human form, this organic plane, according to order, was figured as the Holy place where stood

the showbread, symbolizing man's organic power of reciprocation; and the altar of incense with its volatile ascending sphere.

The plane of this grey tissue of the cerebral cortex is itself, in the more exterior portion of its compound units or cells, the common sensory or general sensory basis of the mind, the animus. The natural world can pass over to the mental world and the spiritual, only through it. It is the ground or tissue through which pass all sensations and within which are enacted and preserved all sense-images and everything involving mental reflections, voluntary, sensitive, conscious. Thus it is the very ground and substance of the exterior or natural memory; and its form, as it exists at the hour of death, determines for every man individually, the bodily aspect of that man eternally; while the lines of its structural fibres modify, limit, every activity and force of life operating through that man to the end of ages.

It is this tissue specifically that is educatable. For, its fullness of form not being connate like the higher planes but only rudimentary at birth, it procures the major part of its structural mass and the direction of the lines of structural growth of its increment, after birth takes place.*

Moreover, the cerebrum, and the cerebrum alone, is the specific ground where remains are implanted. In this plane of the cortical glands of the cerebrum, the Lord, from birth to the tenth year, implants remains,—the rudimentary of a new voluntary; and this implantation is coincident with, and is within, the afflux of sweet corporeal sense-affections and delights, and with the after afflux of sense-images by eye and ear. Moreover, this plane of the cerebrum is the ground of

*The growth and life-history of this tissue in the cerebrum of our Lord while upon earth was parabled in the history of the growth and life of Ishmael and Isaac of Scripture story,—a story taken on organically by Him and lived as the organic history of the grey cells of His own cerebrum. For it is not to be overlooked that the grey cells of the cerebrum of Him,—

as of all organic human forms, —were not connate in their complete form, but at birth were rudimentary. For all this concerns the voluntary and intellectual portion of the mediate mind or organic principle, that is, the portion of the cortical glands or grey nervous cells which form the cerebrum, almost all whose growth takes place after birth.

consciousness; as well as the ground of sleep or unconsciousness. And the facts and laws governing sleep and waking in the cerebrum, involve some of the most living and lovely arcana.

Again, it is only through this plane of the cerebrum of man specifically that the universal creation can return to the Creator,—which return is man's rational office to the macrocosm. For by the channels of the cerebrum alone can the current of Divine Proceeding—embodied microcosmically in the inmost essence which has gone forth by successive degrees of composition to ultimation as red blood,—return by as many ascending degrees of resolution, in perfected circles even to the centre and height from which it issued forth; and thus the transcendent, the universal circulation be complete.

Yet in the perfect return of this circle of proceeding is the sole surety of the permanence of the race or planet, and the sole hope of the fulness and the restoration of man; for only by it can the pure or celestial intellectory become infilled, and thus become part of the organic or infilled structure of his form. This is the new birth; and until this is done the man is not altogether man; not all the form of man is organic in him.

Therefore also our Lord needed to take this plane, that in His form its use, its office, might be achieved. For He looked, and there was no man; therefore He came, and Himself was Man for us; was Man on the plane and circuit of afflux also,—the plane and circuit of the return and resolution not alone of red blood to animal spirit, but of animal spirit to human internal; that the circulation, being complete, might be endless. "The Lord alone,—incarnate and risen,—is perfect Man, and the only Man" (*A. C.* 1414).

Moreover, it is by this plane,—according to the varying images of sensation, imagination, recollection, occurring in this plane in the cerebrum of men upon earth,—that the Lord governs and varies the ideas of all the inhabitants of the other world who are of a spiritual genius, whether they be satans, spirits or angels; that is, men of the spiritual or second heaven.

Now this is an immense use; and the great office of sensation, sense-image, imagination, idea, which is centered in the substance of the growing educatable cerebrum of man, played upon by a thousand sensations, is thus seen to subserve great uses not alone to the man himself in this world and in the next, and to his offspring race, but also special uses, here and now, to that portion of his unseen neighbors,—the human race who have passed through the birth-gate of death and who now constitute the spiritual kingdom of the Lord.*

Certain other organic structures, the activity of which open together with the opening of the life of the cortical glands of the cerebrum, are associated with them as part of the correspondent basis and reflexive ultimate, both of the operative activity and of the experiences of the inhabitants of the spiritual kingdom. These are:

(a) The lungs, or lungs' analogue.

(b) The derivative motions of the lungs' activity in the interior parts of the body,—chiefly expressed as a sort of folding and unfolding of all organic parts occurring coincidently with the motion of inspiration and expiration.

(c) All the activities of the striped or voluntary muscles, as distinguished from the unstriped or involuntary muscles,—which latter belong to the interior of the body and to the celestial kingdom.

We see therefore that a study of the office of sensation is primarily a study of the rise, progress, powers, uses, of the mediate organic plane of man in the province of the cerebrum, that is, of the voluntary and intellectual.

OUTLINE OF STUDY.

In the course of the present paper we will take up,

FIRST, a general study of well grown grey cells or cortical glands as to their characteristic parts or members, with their several functions.

*As distinguished from the celestial kingdom.

SECOND, the general mode by which outside or objective entities entering, by means of undulations and vibrations of ether and of air, and through the doors of eye and ear, into the world of the grey cells of the cerebrum, are able to momentarily strain and twist the exterior tender and plastic parts of those cells to a very momentary replica of their own image. And how those first impressions, those first variations of form and shape, may be afterwards reproduced by the effort of the cells themselves, and, with such reproduction, may be finally infilled and infixed as part of the permanent content of the mind's appropriated and infilled world of habit and imagery.

THIRD. The power of the mental images held in this plane by the steady determinate tension of the cells thereof, to dictate the topics of idea, thought, speech, to all associate spirits; and the potency involved in this organic action, which puts it into the power of the man's own determinate effort and responsibility to elect the character of his spiritual associates.

Afterwards, in the papers to follow, we will take up the topics of:

(a) The unification, by the universal circulation,—or the Divine Proceeding and Return in the microcosm,—of man's many degrees,—discrete substances and fragmentary in completeness,—into a living one of human form.

(b) The facts and laws which govern the connection of the grey cells with sleep, the natural memory, the spiritual body; organic mechanism whereby the will and understanding in the grey cells of the cerebrum are infilled, or "pass into the man" with the infant's first effort at breathing.

(c) The organic mechanism and conditions by which the like occurs in the case of the pure intellectory or celestial (simple) cortex,—which is the new birth and the completion of man.

(To be continued.)

THE FIBRE.

PART III.

DISEASES OF THE FIBRES.

CHAPTER I.

THAT ALL DISEASES IN THE ANIMAL BODY ARE DISEASES OF THE FIBRES.

370. *There are diseases of the solid parts, there are also diseases of the fluid. Solid parts are the bones, cartilages, tendons, cuticles, membranes; nay, even bloodvessels and also fibres, viewed as to their tunics. The fluid parts are humors of divers kinds, such as the gastric juices, the salivas, the pancreatic juices, biles, chyles, the lymph of the thoracic duct, milks, the genital fluid; in general the red blood with its serum, the purer blood or nervous juice, and the purest blood or first essence of the blood. But whether the part be solid or fluid or soft, it still pertains to the fibre; for there is nothing in the universal body save the simple fibre. THE FIBRE, chapter xxiv [nos. 314-316]. From this is derived the compound, or medullary and nerve fibre; and from this the bloodvessel, which is a fibre of the third order. THE FIBRE, chapter xxii [nos. 298-303]. And except fibres and vessels, there is nothing substantial that enters into, raises up and determines the form itself. THE FIBRE, chapter xxiv [nos. 314-316]. Moreover, a fibre is not called fibre, nor is it a fibre, without its fluid or blood; for the containers and the content act as one cause. From these considerations it follows that diseases of the fibres in a broad sense embrace all diseases, in general and in particular; that is, the pathology both of the body and of the animus.*

CHAPTER II.

THAT DISEASES OF THE BODY, PASSIONS OF THE ANIMUS, AND
CHANGES OF THE MIND ARE AFFECTIONS OF
FIBRES IN GENERAL.

371. *Ultimate fibres are the blood vessels; mediate fibres are the nervous and medullary fibres; first fibres are the simple, which are the beginnings of the rest. There is red blood in the ultimate fibres, or vessels; there is purer blood in the mediate fibres; and there is purest blood in the first or simple fibre. Therefore, there are diseases of the bloodvessels or of the red blood; there are diseases of the mediate fibres or of the purer blood; and there are diseases of the simplest fibres or of the purest blood.*

372. *Diseases of the red blood are diseases proper, and indeed are diseases of the body. They spring for the most part from the red blood itself and its vitiation and malignity. From this do the other humors take their vitiation; and thence the glands, muscles, viscera, the vessels themselves and finally the nerves. Diseases of the body are of many genera and innumerable species; these are here to be treated of.*

The remedy for these diseases is obtained from drugs, and hence from the mineral, vegetable and animal kingdom; likewise from regulation of the food or from dieting; from motion and rest, sleep, the temperature of the air, tranquillity of the mind; and from such other means as are found to purify, emend and redintegrate the blood.*

373. *Diseases of the purer blood or nervous juice are not diseases of the body, but are properly of the mind,* and are called sicknesses, passions, and also affections of the mind.* For the nervous juice, that is to say, that juice which runs through the medullary and also through the nerve fibre, is the*

**Animus* the lower, external or animal mind. We have usually carried this word over into the English, but in the present chapter, whenever the word occurs in

phrases of common usage it has seemed advisable to render it "mind"—distinguishing it from the rendering of *mens* (the rational mind) by an asterisk.

same as the animal spirit which rules, not only in the nerves of the body but also in the medullary substance of the cerebrum, cerebellum, medulla oblongata, and medulla spinalis, and which also passes through the middle of the cortical glands which, taken together, constitute the common sensory. Therefore from a vitiated state of the spirits arise sicknesses which affect immediately, not the body but the mind* of the body; such, for instance, as anger, fury, jealousy, species of ludicrous haughtiness, melancholy, inconstancy of moods, impatience, foolishness, timidity, excessive ardor of the concupiscences and excessive slackness, weakness of the imagination, lack of memory and finally privation thereof,—and many other ills which are affections of the cerebrum and are attributed to the heart. Nevertheless they inflow into the body, just as the purer blood inflows into the red blood and the fibres into the bloodvessels, and thus cause diseases.

The remedy for these is also obtained from drugs which purify and restore the blood; and, moreover, from the festive board* and from agreeable and complaisant society; also from moral philosophy. But it should be carefully ascertained whether these sicknesses arise from depravity of the red blood, that is, from some disease of the body, or from causes of their own, or from a perverted state of the intellectual mind.

374. Diseases of the purest blood are not sicknesses of the animus, but are proper to the intellectual mind to which belong perceiving, thinking, judging, willing,—faculties which do not pertain to the animus but to a sphere which is above the animus in man; it is otherwise in brute animals. Such diseases are not, properly speaking, diseases,—which are of the body,—nor sicknesses and passions,—which are of the animus; but rather they are affections of the mind and perversions of its state. Such are various loves of self, vain ambitions, misanthropy, hatreds, excessive desires for depravity whence come malice and insanities whereof there are many species; imbecillity, and also excessive heat in thinking and

**Ex convictu*, literally from eating together.

judging and in the phantasy arising therefrom; nay, also stupidity, and many others,—all of which spring from a preconception of false principles respecting the connection and order of causes and ends, by reason of obsequiousness and complaisance toward the animus and its unbridled cupidities; and especially from the banishing of conscience. Hence come evils themselves, vices, transgressions, which lay waste and destroy their whole republic.

For the purest blood or first essence of the blood, which determines the simple fibre, is not the animal spirit but is the external form of the soul. From this essence and its fibre is raised up the cortical substance wherein our rational mind finds abode; for it is the substantial form thereof, or the first organic form of the soul,—a form, namely, that is aptly framed of simple fibres; and as many as there are of such substances so many little brains and internal sensories are there. Hence in accordance with the internal state of this substance, is changed also the state of our rational mind; and if this is perverted, then spring forth hallucinations and insanities.

The remedy for these is obtained from the same remedies as emend the animal spirit and the sicknesses of the animus; also that the mind suffer itself to be informed by masters who have saner judgment; thus from natural theology and also from revealed; especially that it curb and restrain its animus and the impetuosities thereof, and thus set itself free under its own law and liberty.

375. But we must carefully discriminate and judge as to what diseases are of the body, what of the animus, and what of the mind; for it is often the case that the one so inflows into the other as to make it appear as though they were always coexistent. DISEASES OF THE BODY are all those diseases that arise from causes which act in the bloodvessels, that is, within the bloodvessels; and which act outside the nervous and medullary fibres, but yet upon them, consequently also outside the cortical glands, but yet upon them; also outside, and upon, the organic forms raised up by these fibres.

SICKNESSES OF THE ANIMUS are all sicknesses that arise from causes which act in the nervous or medullary fibres, that is, within those fibres; and which act outside the simple fibres, but yet upon them; consequently also within the cortical glands but yet upon them. For, according to the description in Transaction II [n. 69 seq.], the cortical gland is a tiny ventricle like a heart, or a follicle which passes through the middle of the gland and is continued into a fibre, that is, into its canal. Around this follicle is the body of the gland woven of simple fibres; consequently, when the purer blood passes through this follicle it is said to act within the gland but yet upon it, that is, upon the simple fibres. *Also outside of and upon the organic forms raised up by the simple fibres.*

PERVERSE CHANGES OF THE STATE OF THE INTELLECTUAL MIND† arise from causes which act in the simple fibres and within the simple fibres; as also which act outside the substances or forms of the soul, but yet upon them, consequently, which act in the cortical glands which are the first organic or external forms of the soul

376. *From the above, it is apparent that there are still higher diseases; for the soul is above our intellectual mind and the intellectual mind is the external form of its soul, which is the internal or inmost and supreme form of its system. But of the soul, neither diseases are predicable, nor sicknesses nor affections, but rather guilt, and consequently essential changes of state. But because the soul, properly so called, is above the simple fibre, therefore its guilt can be allotted no place among diseases of the fibres.*

CHAPTER III.

CONCERNING THE INFLUX AND CORRESPONDENCE OF THE SICKNESSES OF THE BODY, ANIMUS AND MIND.

377. *No one, I believe, calls into doubt the fact that our intellectual mind, namely, its thought, will, love and desires inflow into the animus and its imagination, whence are excited*

†In the Latin edition these the rest of the paragraph. words are printed in italics like

cupidities, and that these inflow into the sensations, expressions, actions and pleasures of the body; for he who reflects a little upon the things which exist in himself, realizes that the universal corporeal system is so connected that what is superior and interior acts into that which is inferior and exterior, and also vice versa. This fact is more than sufficiently proved by experience alone; for the mind frequently so operates into the body as to trouble and darken the blood; as, for instance, when the mind is desirous of some end and this escapes it, the animus becomes so angry, inflamed and furious, that the blood grows hot and the bile is expelled from the gall bladder, and that fever seizes upon the viscera, nay, even upon the lower intestines so that they are twisted into a knot. Consequently there is a perpetual influx and a perpetual correspondence; nay, whenever they do not correspond, a combat is excited, whence arises disharmony which is the cause of many sicknesses and diseases. But to treat of this influx is the work of an entire volume.

378. *All diseases of the body whatsoever, recognize some corresponding sickness in the animus, and, corresponding to this, an affection or change of state in the mind. But although they correspond, they are not therefore to be denominated in like manner; as neither are diseases themselves. These are called, diseases in the body; sicknesses and passions in the animus; changes or perverse states in the mind; guilt in the soul. The pain which is in the body is called anxiety in the animus, evil conscience in the mind, hell in the soul. Bilious fevers in the body are anger, fury, resentment in the animus, burning hatred in the mind. The one also excites the other. Paralysis in the body corresponds to foolishness in the animus, and to fluctuation of the will and lack of the power of determination in the mind. So also in the other diseases. But there is no way of setting forth the correspondences of all the diseases until the nature of each has been explored. Respecting correspondences and their application the reader will see marvels in the Transaction on this subject.**

*See above, n. 307, note. In the Latin this sentence is printed in italics.

379. *The correspondence of diseases is of like nature as the correspondence of grosser, purer and purest blood; or as the correspondence of bloodvessels, nerves fibres and simple fibres; of heart, brain and cortical substance. THE FIBRE, chapter xxiii [nos. 306-308]. For these are forms which mutually succeed each other and, like as they mutually correspond to each other, so also do they mutually inflow into each other, act and suffer. From this it is plainly apparent how many are the parts required for the science and art of medicine in order for its utmost perfection.*

CHAPTER IV.

THE GENERAL CAUSES OF DISEASES OF THE BODY.

380. *There are general causes both of diseases of the body and of sicknesses of the animus, and also of the essential changes of state of our rational mind; but here I shall treat only of the causes of diseases of the body.*

381. *All those agencies are causes of diseases of the body, which change a better state of the blood into a worse. When the blood is changed, then all the humors that come from the blood as from their storehouse and seminary, are also changed; and, with the blood and humors, the vessels and the several fabrications of vessels and fibres, and consequently also the members and viscera, and finally the whole corporeal system.*

381a. *The first, principal and most general cause of diseases of the body is its aliment, that is to say, its nourishment from substances dry and liquid. Aliments are substances which refresh and renovate the blood and, at every turn of the circulation, restore it after its dissolution; and which especially subminister those elements that enter into the chyle and constitute the scrum whereby the blood is reintegrated. On the quantity, quality and dispensing of the aliments depends the temperament of the blood. An excessive quantity, even of aliment of the better kind, that is to say, intemperance, is injurious. The quality of all foods and drinks is different; one is suitable, another unsuitable, according to the nature of each person's blood and body. The dispensing, a matter which is of the*

utmost importance, demands that a larger or smaller quantity of aliments of this quality or of that be furnished for the use of refreshing the blood. Therefore the most general cause of disease is a quantity of a quality of aliments badly dispensed. But the special causes of this condition are as many as are the species of aliments and the natures of the persons feeding upon them.

382. *The nature of the effect produced by the aliments that are taken in is shown by the excretions of the bowels and also by those of the bladder, that is, by the urine; by the pulsations of the arteries, the respiration of the lungs, the changes of the animus, and discomforts that happen to the viscera. The specific and individual signs exceed all number.*

383. *A secondary and more remote cause of diseases of the body is that subtle substance, little obvious to the senses, which is drawn in from the circumfluent air, by the respiration of the lungs and by the cuticles, and is introduced immediately into the capillary veins. These aliments are both dry and liquid, and they find lodgment in the air. For, diffused in the air, are nitres, urinous and sulphurous substances, dews, waters, essential juices whence come odors. What is effected by the presence of aerial nitre in the blood, and also by the presence of pestiferous vapors, is shown by experiments. Moreover, when the hands or face are wet, sometimes the water is absorbed even to dryness, and sometimes it is thrown out. Thus our corporeal system is like, as it were, to the system of the atmospheric world, which now impregnates itself with vapors and now clears itself from them by rains. The pores themselves are opened and closed according to the needs of the red blood and according to the state of the purer blood. Of these substances, the amount insinuated is so great that it sometimes exceeds the amount of the aliments taken in by the gullet, as is shown by the examples of those who have sustained life for a long time without food and drink, and of brute animals which pass through a long period on these foods alone. On the quantity, quality and economic dispensing of this aliment, also depends the temperament of the blood. But*

neither the quantity, nor the quality, nor the dispensing of this nourishment depends on our own arbitrament; for it is remote from the senses and is governed for the most part by a certain intelligence* whose instinct and moving cause is hidden from us. But more prudent dispensation is made by this intelligence, than is made by us in respect to ailments obvious to the senses,—aliments which, of our will, are put into the stomach through the mouth without discrimination.

384. The effect produced by these aliments is known from the pulse, the respiration, the affections of the brain, the quantity and quality of the sweats,—for there are paths of excretion from the arteries just as there are of deglutition by the veins,—and at the same time also from the digestion, sleep, wakefulness, and other signs as yet unknown.

385. A third and still more remote cause of diseases of the body is that insensible perspiration, called the Sanctorian,† by means whereof the aliment is drawn, not as before from the air, but from the ether; nor is this aliment led immediately into the veins or red blood, but it is led through certain fibres towards the cortical brain. Respecting these points compare THE FIBRE, chapter ix [n. 168 seq.], and Transaction IV ON THE ANIMAL SPIRIT‡ where the corporeal fibres are treated of. And is thence insinuated into the purer blood for the integration of the animal spirits and thus is derived into the medullary fibres and by them mediately into the blood; for as the red blood, in order for its refreshing, enjoys its little mouths and organs, so also does the purer blood. This point is placed in sufficiently clear light by the experience of centuries, especially of our own. On the quantity, quality and economy of these elements, depend the nature and condition of the purer blood,

**A quodam sciente*, literally "by one who knows."

†The Sanctorian perspiration so called from its discoverer, the Italian anatomist Sanctorius, is that insensible perspiration of most subtle humor which exhales from

little vessels, the sweat glands under the epidermis, which are much finer than the miliary or sebaceous glands. They are called by Swedenborg "pores of the second kind." (A. K. 505.)

‡See n. 81, note, and n. 242, note.

that is, of our animal spirits; and because the latter flow into the red blood and constitute its principal essence, it must needs be, that if they be malignant they act as the roots of diseases of the body.

386. One cause of diseases of the body which must also be referred to the class of general causes is the sickness of the animus which depends, as on an external cause, on the nutrition mentioned just above. Of this sickness there is also an internal cause, namely, the state of the mind itself,—a state which rouses and moves the animus also, as its servant, to the carrying out of what it wills and desires. But this is the supreme and most remote cause of diseases of the body; for it is quite evident in the clear light of experience that a disturbed mind disturbs the blood of the body, nay, frequently to such an extent that from any excessive desire for an end, together with the loss thereof when hope fails us, we are thrown headlong into passions of the animus, and from these into diseases of the body, nay, into death.

387. The four principal and general causes of diseases, recounted above, are the same causes as those by which we exist and subsist, that is, by which we live in the body; they are also the same as those from which we die; so that the causes of corporeal life are also the very causes of diseases and likewise of death. For we live on aliments drawn from the earth, and from air and from ether, but a quantity of a quality of these aliments badly dispensed, is the verimost cause of diseases or of the fact that every day we draw nearer to death. Ignorance as to the quality of nourishing foods, as to our constitution and as to the art of dispensing, that is to say, as to how quantity and quality should be dispensed with a view to the constitution of the recipient body; and, moreover, the fact that such matters are left to our will and its desires,—these circumstances produce the effect that the same causes which are causes of life are causes of the destruction of life. So likewise the affections of our animus and mind; for as many as are the desires, and as many as are the cupidities, so many are the heats and excitements of life; but an immoderate

excitation,—that is to say, an immoderate quantity,—and indeed of those desires which tend to depravities and are inimical to us,—that is to say, of a worse quality,—badly dispensed, produces the like result, namely, that they are the causes of our destruction or death. Just as abuse or quantity injures, so does defect or too great paucity. That the causes of life are the causes of diseases and consequently the causes of death, is the very nature of nature; to wit, that in her several causes and her several subjects, opposites and contraries are present in potency, whence come acts; for every created essence is by nature subject to change, privation and destruction.

388. *The OUTMOST of all the causes that produce diseases is that which acts outside the bloodvessels, but yet upon them, and consequently outside the organic forms raised up by the bloodvessels, but yet upon them; that is to say, which acts upon the outmost surface of the body. Of this nature are violent assaults, blows, wounds whence result copious emissions of blood, luxations, contortions,* or injuries inflicted on the members, organs, head, etc. Of these causes some are fortuitous, and some voluntary. They are FORTUITOUS when they come in some unforeseen or unexpected way, such as the fall of a house, a ball thrown from a sling or gun, a tile falling on the head from the gutter of a roof, and like accidents. They are VOLUNTARY when one lays hands on himself, desires death and invites it; so also if he invites diseases. There are also causes MEDIATE between the fortuitous and the voluntary, as in case of duels, battles and perils by land and sea.*

389. *Just as there are outmost causes so also are there INMOST causes which are the first causes of all, or the causes of causes and the verimost essential. These, since they are not voluntary or of the mind but are above voluntary causes*

**Contorsiones.* Blancart's *Lexicon Medicum* (ed. 1777) defines this word as meaning an incomplete separation of any member of the body from its connections so

that it leaves its natural position. Thus it includes all kinds of sprains, strains, displacements and muscular contortions.

which are of the mind, are called CONTINGENT CAUSES; for they come from some other source, nor do we know whence; and therefore we attribute them to fortune, fate or providence; such, for instance, as our coming into one or other of the dangers of life and the diseases arising therefrom; coming, namely, by chance, into those causes which are outmost and have just been recounted, or upon noxious aliments, or into places where are poisonous and deadly vapors, into emotions of the animus and desires and immoderate heats of the mind, and into innumerable like things, that is to say, into all the causes of diseases. But since there is no such thing as pure chance or fortune or luck; and since there is a series and connection of contingent causes from first, and the first causes in the animal body arise from the soul; hence so also do the contingent causes of diseases. Thus these necessarily spring from the soul as from their fount, and from its change of state; that is to say,—according to the nature of the soul, or according to the nature of its reception of the influx of life from the supreme spiritual form, such is the contingency which inflows into the series of our life. But these points are treated of in the Transaction on Providence.*

*A chapter on "Divine Providence, Predestination, Fate, and Fortune" was to have been included in Transaction vi, On the Soul, or Rational Psychology (3 *Doc.* 831), and in fact these subjects are dwelt with in the posthumous work on the Soul, in the chapter "On Divine Providence" (*Soul*, 549-561). But the author seems to have also written a separate little work on this subject; for at the end of the chapter just referred to he says: "But Providence, Fate, Fortune, Predestination, and Human Prudence have already been treated of; these you may consult and subjoin" (*Soul*, 561). This treatise

is evidently one of those little "Transactions" which the author designed to publish "not less than five or six times a year" as contributions to his great work. In an edition of *OECONOMIA REGNI ANIMALIS* in 1742 four such treatises were announced as "to be published." They are all parts of Transactions v and vi as outlined by the author, and the last of them is entitled "On Divine Providence, Predestination, Fate, Fortune and Human Prudence." (1 *Doc.* 585). This is undoubtedly the work referred to in *THE SOUL*, n. 561, and also in our text as the "Transaction on Providence." The work itself has never been found.

390. Such then is the series of the essential causes of life, diseases and death, from the inmost or contingent cause through intermediate causes to the outmost. In addition, the causes of disease are mediate, ultimate, innate and superadded. Essential causes concern the origin of diseases, mediate causes the progression, and ultimate causes the effect. Innate causes are hereditary, superadded causes are acquired.

391. **MEDIATE CAUSES** are those which impede the causes of life in their progression from first origin to effect. They are causes which entirely inhibit the progression of aliments, both of the terrestrial and aerial, and also of the etherial; likewise, which inhibit the emotions of the animus and mind,—emotions which are the heats of life whence come diseases. Progression is promoted by sleep, wakefulness, motion, rest, social intercourse, occupations, and many other conditions. If these are not suffered to progress in their natural order, those diseases arise the causes whereof are said to be **MEDIATE** between those that furnish an origin and those that produce an effect. For diseases flow from excessive sleep, excessive wakefulness, excessive motion, excessive rest; or from the privation of these and also from the privation of occupations by which we are roused up.

392. **ULTIMATE CAUSES** are those which restrain or entirely stop the **EFFECT**. Effects are the discharging of the bowels and bladder, sweat, the Sanctorian perspiration, the exercise of venery, the hemorrhoidal, menstrual and salivary flux, and many others. If these are impeded diseases ensue. For all causes have a certain series from the first point to the last; and so also the causes of life, diseases and death. If origin is denied, progression and effect also come to nothing; if effect, the course and progression from origin to the effect provided by nature is also denied. Now because the effect is the ultimate in the series of causes, therefore these causes are called ultimate.

393. **INNATE CAUSES** are hereditary, that is, are derived from parents; **SUPERADDED CAUSES** are those which come from the previous acts of life and put on a nature as though they

were innate; they are also called acquired causes; these are allotted to their heirs. But neither of these causes can properly be said to be the causes of diseases, since they are only dispositions for receiving diseases of one kind or species or another. The subjects are of universal variety. The blood of one is never entirely like that of another, as neither are the animus and mind. Therefore we are more or less prone or slow to the taking of diseases. One thing innate with all of us, and which we derive from our parents as a universal characteristic, is our decline and ultimate death. Therefore, with advancing age, we come into sicknesses or infirmities, the complement of which, or the last line drawn under the sum of the sicknesses, is the death of the body.

394. We have thus distributed the causes of diseases into their classes; for without a distinct knowledge of causes there is no distinct, still less any certain science and art of healing. Each disease can, as I believe, be reduced to one of the classes defined above. But recapitulation will perhaps be of service. Of diseases there are PRINCIPAL or ESSENTIAL causes; these are many in number, one following the other. The FIRST or INMOST is called the contingent cause. After this comes the SECOND, which results from the state of the mind and animus; the THIRD, which results from the use of ethereal aliments; the FOURTH, from the use of aerial aliments; the FIFTH, from the use of terrestrial aliments; the OUTMOST which act upon the forms of the body extrinsically. Since there are essential causes it follows that there are also ACCIDENTAL CAUSES, to wit, all those causes which arise from the essential; as, for instance, those which arise from vitiation of the humors born of the blood. Philosophically speaking, all causes of diseases are accidental except that first cause which is called the inmost. But these subtleties we pass over. The causes just enumerated are those which give RISE to diseases; after these come MEDIATE CAUSES, which inhibit the PROGRESSION of the natural causes of life; and ULTIMATE CAUSES which inhibit their EFFECT. But INNATE and SUPERADDED CAUSES are not active causes but passive; thus, properly speaking, they are states

recipient of causes; for wherever there is an active there must be a passive.

CHAPTER V.

PARALYSIS AND PARESIS.

395. *Paralysis arises when the red blood is intercepted or impeded as it flows into the smallest vessels of the motor fibres of the muscle; but if the animal spirit is intercepted or impeded as it flows into the motor fibres of the muscle, apoplexy results; thus paralysis differs from apoplexy. The animal spirit and the blood are the two principles which actuate the muscle; for the former excites it to action, while the latter restores it, whence come the muscle's alternate motions. Therefore when there is a deficiency of one or the other the reciprocation perishes; for the spirit is the agent while the blood is the reagent, and the agent knows no terminus except from its reagent by which it is determined into prescribed motions and thus into alternations of motions. There are some, nay, many, who confound the cause of paralysis with that of apoplexy; for to both alike they ascribe a defect of the nervous fluid and an influx of the blood. But that these diseases differ, and how much they differ, is known to everyone. But a distinct knowledge of the causes of both diseases depends upon a distinct knowledge of the muscle and its motor fibres, and of the forces acting into them; also on a distinct knowledge of the blood and its vessels; and especially on a distinct knowledge of the nerves and of the interstices which pass through the porous structure of the nerve. A muscle cannot succumb to disease unless it is paralytic or apoplectic, that is, unless there is a deficiency of the blood or a deficiency of the animal spirit; for it is well known that if its artery, or nerve is torn, a muscle loses its faculty of action. Therefore privation of the blood cannot be the same cause as privation of the spirits; the blood is in the vessels, but the spirit is in the fibres of the nerves.*

396. *If the prevention of the flow of red blood into the capillary vessels of the motor fibres is the proximate cause*

of paralysis, the question arises, In how many ways is this blood intercepted? The FIRST way is, if the arteries flowing into a muscle or part of a muscle are stopped up, compressed, torn, or become tendinous,—that is to say, the larger or common arteries. The SECOND is, if the capillaceous vessels themselves which encircle the motor fibre become exsanguinous and coalesce into threads of a tendinous nature. The THIRD is, if the arteries secrete and unload an abundance of serous humor, and the veins and other ducts fabricated by nature fail to take it up and carry it off. By reason of this the muscle and its membranes and ligaments are inundated and relaxed; thus not only is the muscle rendered impotent of action, but, in addition, the more minute vessels do not admit the blood into their cavities. FOURTH. A similar effect results if there is an abundant affluence of humor from the nerves,—namely, through the interstices of the fascicles of fibres which are somewhat open. Respecting these interstices see THE FIBRE, chapter X [nos. 188-207].

397. As regards the FIRST: The arteries are STOPPED UP from causes in the blood; as, if the blood be clotted, pituitous, cold, sluggish, filled with bile, concreted into fibres, destitute of spirit, or itself spurious. They are COMPRESSED by ligatures, sitting, neighboring abscesses, fistulas, ulcers, and contortions* of the members. They are TORN by erosions, ulcers, aneurisms, applied force. They become TENDINOUS from privation of the influx of the spirits into the fibres of the muscular tunic, and of blood into the other tunics; from the stopping up of the glands situated in their tunics, and from inaction.

398. With regard to the SECOND: These smaller arterioles COALESCE by reason of too great inactivity, of fat, and of the same causes that produce tendinification in the larger arteries; age also causes them to diminish, to coalesce, and to be obliterated and end as lines of a tendinous nature.

399. As concerns the THIRD: An outflow of ichor or serum arises from the closing of the paths of evacuation, such as those between the motor fibres, through the surrounding mem-

*See n. 388, note.

brane and the skin, nay, through the bladder and bowels; and from the compression of the absorbent veins. Thus if the veins are compressed, stopped up or become tendinous, a similar effect results as in the case of the arteries. Thus when a muscle with its membranes and ligaments has become relaxed and flaccid it no longer possesses in itself the power of action. Moreover, the humor has the effect of impeding the influx of blood into the vessels of the motor fibres. The same is the case if a pure serum somewhat sluggish in its nature inflows into these same vessels; for such serum resists the active nerve fibre; the case is different with the blood.

400. AS TO THE FOURTH: If an opportunity of discharge is denied to the humor that flows out from the interstices between the fascicles of a nerve, the motor fibres, or the muscle with its membranes, are in like manner relaxed and infested with waste matter. For when a nerve is unfolded, all the humor that is carried down through the interstices between its fascicles escapes, and, having performed its function, is rejected; but if it is denied an exit, it is accumulated in the muscle. This humor is brought to the nerve in the region of the cortical substances; for when the arteries are inflamed it is collected in the sulci or anfractuous folds between the layers and reticular plexuses of the medullary substance, and under the dura mater where the fascicles of fibres unite into a nerve. In this way do they secrete their lymph in the cerebrum, cerebellum, medulla oblongata and medulla spinalis, in the nerve itself from the arteries which pass over it, and between the fascicles.

401. From this it follows that a paralyzed muscle is soft, relaxed, as it were loosened from connection with the neighboring parts, hence deprived of reactive powers and thus incapable of elevation by any power of the will, devoid of sensation except one that is mute and is stimulated by pricking, and as it were dead flesh unless the fibre be living. It can be revived if the disease does not have its seat in the primary viscera of life, such as the heart, lungs, stomach; as a rule, also, it has its seat in the lower intestines, the abdomen, bladder, thorax, shoulders, arms, loins, feet, neck, and face. When it is of a lighter character it is called PARESIS.

402. Paralysis is of a more universal nature when the affected veins are nearer the heart, or when the nerves from which this malady springs are nearer the brain or further distant from the muscles. The paralysis of one muscle is felt,—and, in their own way, is suffered,—by the neighboring muscles according to their connection with it,—especially by an antagonistic muscle. From various indications, those skilled in matters anatomical know wherein the seat of the disease lies; from this and also from causes, judgment may be made as to whether it is curable, whether or not it is fatal, and what measures must be used.

403. After a somewhat severe paralysis has persisted for a long time, many of the arterioles remain collapsed, the ligaments of the muscles too greatly extended, flaccid, and partly ruptured, and the membranes somewhat loosened from their flesh; so also the fascicles and their tunics and ligaments. Sometimes the larger vessels are injured; hence come un-ordered motions, at times convulsions, debility, tremor, shaking, lack of obedience to the several decisions of the brain, and many other symptoms.

(To be continued.)

THE NEW PHILOSOPHY.

VOL. XVII.

JULY, 1914.

No. 3

TRANSACTIONS.

OF THE

SEVENTEENTH ANNUAL MEETING

OF THE

SWEDENBORG SCIENTIFIC ASSOCIATION.

The Seventeenth Annual Meeting of the SWEDENBORG SCIENTIFIC ASSOCIATION was held in the Parkway Building, in the City of Philadelphia, on May 13, 1914, Dr. Frank Sewall presiding.

AFTERNOON SESSION.

1. The **Minutes** of the Sixteenth Annual Meeting were adopted as printed in the NEW PHILOSOPHY, for October, 1913.
2. The Chair appointed Mr. L. E. Gyllenhaal a **Committee on the Roll**. The Committee reported an attendance of twenty-four members and thirty-five visitors.
3. The Report on **Membership** and Subscriptions to the NEW PHILOSOPHY was as follows:

MEMBERSHIP:

New Members since May, 1913	16
Resigned	2
Lapsed	2
Died	4
Net Membership, May, 1914	228

NEW PHILOSOPHY:

Subscribers, also Members	216
Subscribers not Members	32
Total number of Subscribers	248
Exchanges	13
Free copies (mostly to Libraries)	65

NEW MEMBERS since May, 1913:

Messrs. T. W. Griggs & Co., Durban, S. Africa.
 Dr. Wells Healey, New Orleans, La.
 Mr. G. W. E. Holman, London, Eng.
 Mr. H. Howard, London, Eng.
 Mr. R. S. Hutchinson, Knoxville, Tenn.
 Mr. Harry D. Hutton, Washington, D. C.
 Mr. Hubert Hyatt, Toronto, Can.
 Rev. Abraham Knobel, San Diego, Cal.
 Mr. A. O. Lechner, Pittsburgh, Pa.
 Rev. N. D. Pendleton, Bryn Athyn, Pa.
 Mrs. A. K. Roy, Bryn Athyn, Pa.
 Miss Clara Scott, Bryn Athyn, Pa.
 Mr. Jesse V. Stevens, Glenview, Ill.
 Mr. Emil Theilman, Kansas City, Mo.
 Mr. W. H. Thompson, Cleveland, Ohio.
 Mr. F. F. Winkler, San Francisco, Cal.

4. The **Secretary** reported that Mr. E. F. STROH had resigned as Treasurer of the Association on January 1, 1914, and that the duties of the office had been cared for by the Secretary until February, when Prof. C. E. DOERING was appointed Treasurer by the Board of Directors.

The Secretary also reported that owing to the serious illness of Mr. ALFRED H. STROH no special report had been received relating to the progress of the work in Sweden.

And further that a number of letters had been received during the year expressing interest in the work of the Association, and in its organ the NEW PHILOSOPHY; especial interest being shown in Miss LILLIAN G. BEEKMAN's Papers.

5. The **Board of Directors** reported that three meetings had been held during the year. At the first, held on May 15, 1913, immediately following the Annual Meeting, the following officers were elected: *Vice-President*, Dr. F. A. Boericke; *Secretary*, Prof. Reginald W. Brown; *Treasurer*, Mr. Emil F. Stroh; *Editor of New Philosophy*, Prof. Alfred

Acton. At this meeting the Board agreed to recommend that Mr. Alfred H. Stroh arrange to devote a larger proportion of his time to the reproduction of Swedenborg's unpublished and less available works,—especially such as are not being published by the Royal Swedish Academy of Science. The unanimous opinion of the Board was that the most important work at present in Sweden, is to put unpublished and less available works which will be of permanent value into available and preservable form. It was agreed to appoint Dr. Sewall and Mr. Alfred H. Stroh to represent the Association at a conference to be held in London in regard to plans for the continuation of the work being done in Sweden.

At the second meeting, held on September 2, 1913, ways and means for the separate and permanent publication of the SENSES were discussed. The funds of the Association being low it was suggested that a special fund be raised, Dr. Boericke generously offering to subscribe \$25.00 toward such a fund. (Later, owing to the paying up of delinquent dues it was found unnecessary to solicit further subscriptions for a special fund.)

The third meeting was held on May 13, 1914. This meeting was mainly occupied in discussing what disposition should be made of the Association's stock of publications. The policy adopted by the Treasurer and the Editor of the *New Philosophy* of selling Association publications at half price to members when ordered through the Association direct was formally ratified. It was also agreed that the Association offer the Academy Book Room 25 per cent. for handling its publications when sold at full price, and 10 per cent. when sold at half price to members. .

6. The **Treasurer** presented his Report. (See p. 88.) On motion it was resolved that the report be duly accepted and filed when audited.

7. The **Editor of the New Philosophy** reported as follows :

Since my last report in May, 1913, only three numbers of the *NEW PHILOSOPHY* have appeared, instead of the four required, by our dates of publication. The fourth number should have been published in April of this year, but has so far been delayed, owing to lack of time

for its preparation by the editor. Part of this number is already in print, comprising the first installment of Part III of the *FIBRE*, entitled *DISEASES OF THE FIBRE*. The number will also contain the first installment of the fifth of Miss Beekman's *PHYSIOLOGICAL PAPERS*, the subject of which is *The Office of Sensation*. It may be recalled that a lengthy review of this paper was given by the writer before the Association at its annual meeting in 1912.

The three numbers of the *NEW PHILOSOPHY* thus far issued have included one installment of the translation of the *FIBRE*,—being the whole of Part II, *On the Arachnoid Tunic*; three installments of Miss Beekman's *PHYSIOLOGICAL PAPERS*; a lengthy review of the latest English translation of the *PRINCIPIA*; and the *Transactions of the Association*. In connection with the review of the *PRINCIPIA* which was a severe condemnation of the translation, it may be noted that after its publication the editor received a letter from the publishers of the work—the London Swedenborg Society—expressing appreciation of the review and tentatively proposing steps for the revision of the translation. The correspondence with the Society on this subject has proceeded very slowly, owing doubtless to the changes made necessary by the death of the Society's late Secretary, Mr. James Spiers.

The three published numbers of the *NEW PHILOSOPHY* have contained a total of 182 pages, and, excluding the 74 pages devoted to the Association's *Transactions*, have averaged 36 pages in each issue. This is 4 pages more than the usually contemplated number, but, provided the finances of the Association justify the expense, the editor will continue this increase in the size of the issues unless otherwise instructed by the Association. This is desirable at the present time as a means of expediting the publication in book form of the translation of the *FIBRE* and of Miss Beekman's *PHYSIOLOGICAL PAPERS*.

The latter work is being reprinted, as published, in an edition of 500 copies, under the title *THE RETURN KINGDOM OF THE DIVINE PROCEEDING*—a title which was adopted after consultation with Miss Beekman.

The work on the *FIBRE* is being reprinted, as published, in an edition of 1,500 copies. With the completion of the April issue of the *NEW PHILOSOPHY*, three-quarters of the work on the *FIBRE* will have been completed, as compared with two-thirds as reported at the last meeting of the Association.

In this connection it may be noted that considerable parts of the *FIBRE* were included in Dr. Rudolph Tafel's proposed edition of *THE BRAIN*—especially in the as yet unpublished vols. 3 and 4 of this work. The editor of the *NEW PHILOSOPHY* having learned that the MS. of these two volumes had been given to Prof. Ramström to prepare for publication wrote to the publishers—the London Swedenborg So-

ciety—calling attention to the fact that the volumes included a considerable portion of the work on the *FIBRE*, and that this work was now in course of publication by the Association, two-thirds of it being already in print. The letter was written in pursuance of the agreement entered into at the meeting of New Church publishers held in London, 1910, to avoid, as far as possible, reduplication of work, by mutual notification of work undertaken. The editor's letter was submitted to Prof. Ramström, and the Society has since requested that copies of the Association's reprint of the *FIBRE* be sent to the professor. The reprints thus far made (144 pp.) will shortly be sent, and others will be sent as issued.

In accordance with our usual practice, 50 copies of the President's Address of the last meeting of the Association were printed in pamphlet form for the private use of the President.

Since my last report the work on the *SENSES* has been published in book form, comprising 338 pages. Unfortunately the publication did not include the Index, which is still in course of preparation by the translator, Prof. Price. It is hoped that this will be completed and published during the present year. We note that the serial publication of this work was commenced in the *NEW PHILOSOPHY* for October, 1900, over 13 years ago. In the 9 years preceding July, 1909, the first 162 pages were published, but in the five years following July, 1909, at which date the *NEW PHILOSOPHY* inaugurated the policy of giving more space to translations, the remaining 170 pages were printed. As the work has never before been available to any but the Latin reader, its present appearance is an indorsement of the wisdom of the policy adopted by the Association in 1909.

ALFRED ACTON, *Editor*.

8. On motion the Editor's Report was adopted as read.

9. The Committee on **Swedenborg's MSS.** reported that it was waiting to learn what work is being planned to be done in Sweden in the publication of Swedenborg's early MSS.

10. On motion, the Chair appointed a **Nominating Committee** of three consisting of Mr. John Pitcairn, Rev. E. S. Price, and Rev. N. D. Pendleton.

11. The Secretary read a Report from Miss GRETA EKELOF (acting for Mr. Alfred H. Stroh) on the progress of the work in Sweden.

12. The funeral procession in commemoration of the patriotism of the soldiers who fell at Vera Cruz was now passing on the street below and as a mark of tribute to this event, it was resolved to suspend the proceedings of the meeting for ten minutes.

13. On the resumption of the meeting Mr. Acton spoke feelingly concerning the occasion which had led to the ten minutes suspension.

14. President SEWALL spoke of the Association's appreciation of Mr. Alfred H. Stroh's work in Sweden, and sympathetically expressed the regret that was felt on account of his serious illness and of his not being able to attend the meeting.

Professor ACTON paid a tribute to the great work which Mr. Stroh has been doing. He also referred appreciatively to the kindly actions of the Swedenborg Society, Dr. Retzius, and others, in promptly caring for Mr. Stroh when his health so unfortunately broke down. "Now that Mr. Stroh is recovering," concluded Mr. Acton, "it is very appropriate that we, as an Association of which he is a member, put into the form of a resolution an expression of our sympathy and of our good wishes:

Be it therefore, *Resolved*, that

We, the members of the SWEDENBORG SCIENTIFIC ASSOCIATION, assembled at this annual meeting, have heard with great regret of the the serious illness of Mr. ALFRED H. STROH, and desire to express our deep sympathy with him, and our hope that the improvement in his health, which we are happy to learn has recently set in, will continue to final recovery. And, at the same time, we wish to express our sincere appreciation of the work in which Mr. Stroh has been engaged in the prosecution of Swedenborgian investigations and publications, and trust that he may long be spared to continue this work.

15. The resolution was seconded by Professor ODHNER and unanimously carried by a rising vote.

16. Professor DOERING speaking to the resolution called attention to the fact that the work was successfully going on since Mr. Stroh's illness; this was an evidence of Mr. Stroh's efficient planning and good management.

17. Professor ODHNER presented a paper on **Swedenborg's Book of Dreams**. (See *New Church Life*, July, 1914, p. 389 seq.) The paper was of unusual interest and was discussed at some length by Messrs. SEWALL, ACTON and others.

18. Professor Brown presented a paper on **Swedenborg's Theory of Black and White as Fundamentals in the Production**

of Colors. Unfortunately on account of the lateness of the hour it was not possible to finish the reading of the paper nor to discuss it. (It is hoped that it will be possible to publish the complete paper in a future issue of the NEW PHILOSOPHY.)

19. The **Nominating Committee** reported the following nominees for election: *President*, Dr. Frank Sewall; *Directors*, Dr. F. A. Boericke, Mr. Horace P. Chandler, Prof. Alfred Acton, Mr. B. A. Whittemore, and Prof. Reginald W. Brown.

20. On motion, the Secretary was instructed to cast a ballot for the nominees, who were duly elected to hold office during the ensuing year.

21. On motion, the meeting adjourned until 7:30 P. M.

EVENING SESSION.

22. President SEWALL delivered the **Annual Address** on "The Only Begotten in Swedenborg's Cosmology and Theology." (See p. 89.) Dr. Sewall prefaced his address with the following brief report:

The year 1913-1914 is notable in the annals of the Association as having witnessed, after long delay, the publication of the completed translation of the work on THE WORSHIP AND LOVE OF GOD and the publication of the first edition in English of the work on THE FIVE SENSES.

The call for a third edition of the work on THE SOUL, or RATIONAL PSYCHOLOGY, which the New Church press is undertaking, indicates a sustained if not increased interest in Swedenborg's psychological writings.

The work on the WORSHIP AND LOVE OF GOD is of unique interest owing to its peculiar style and the relation it sustains to the Philosophical and the Theological series of the author's writings. Its long awaited publication at this time seems to make it a fitting subject for our special consideration at this annual meeting and I consequently ask your attention to some observations on the subject which occupies so prominent a place in this treatise—The Only Begotten.

23. Great appreciation of the President's Address was expressed by Bishops N. D. and WM. F. PENDLETON and Prof. ACTON.

24. The meeting adjourned at the call of the Chair.

REGINALD W. BROWN,
Secretary.

TREASURER'S REPORT.

May 13, 1914.

RECEIPTS.

Dues	\$217.50	
Subscriptions "New Philosophy"	140.23	
Sale of Publications	43.33	
Special Contributions	38.65	
Advertisements	36.00	
		<hr/>
	\$475.71	
Petty Cash Redeposited	4.80	
Balance, May 14, 1913	194.08	
		<hr/>
	\$674.59	\$674.59

EXPENDITURES.

Printing New Philosophy (4 nos., April, 1913-January, 1914)	\$217.14	
Making cuts	13.00	
Table of contents	7.19	
Paper, cover, envelopes, etc.	26.89	
		<hr/>
	\$264.22	
Advertisement: Messenger and Quarterly... ..	23.65	
Balance "Worship and Love of God" account sent to Mass. N. C. Union	10.60	
Paper, binding, and freight on "Senses" to date	30.26	
Paper for "Return Kingdom"	1.43	
Publications	14.65	
Stationery, and sundry expenses as per Cash Book	69.43	
		<hr/>
	\$414.24	
		<hr/>
Balance		\$260.35

The above Balance includes amounts carried on the following accounts:

Royal Academy Publications	\$10.00	
Royal Academy Plates	2.00	
		<hr/>
		\$12.00

C. E. DOERING,
Treasurer,

OFFICERS OF THE ASSOCIATION.

At a meeting of the Board of Directors held after the adjournment of the afternoon session of the Annual Meeting, the following officers were elected: *Vice-President*, Dr. Felix A. Boericke; *Secretary*, Prof. Reginald W. Brown; *Treasurer*, Prof. C. E. Doering; Editor of NEW PHILOSOPHY, Prof. Alfred Acton.

REGINALD W. BROWN,
Secretary.

PRESIDENT'S ADDRESS.

"THE ONLY-BEGOTTEN" IN SWEDENBORG'S COSMOLOGY AND THEOLOGY.

BY FRANK SEWALL, A. M., D. D.

The doctrine of a Mediator between the Infinite and the Finite and so between God and Nature is as old as philosophic thinking.

This bridge or nexus is seen in the conceptions of the early Greek philosophers: as in that of NUMBER with the Pythagoreans and in the NOUS or UNIVERSAL MIND of Anaxagoras. Plato's IDEAS as forms emanating from the Divine Good and shaping the world, or his concept of God as the IDEA OF THE GOOD becoming the world-builder,—these conceptions are revived later in the Logos doctrine of the Jewish Philo of Alexandria, and they find their full dramatic exhibition in the great trine of Plotinus and his fellow Neo-Platonists, who treat of the One and Indefinable giving birth to the NOUS or mind-world of Ideas, out of which is produced the soul.

According to Plotinus the NOUS of Plato was the Mediator or Demiurgos and hence the Cause: and this Cause has a Father which is the Good, which is superior to both reason and being. But Plato's conception of God as at once the Good and the Idea of the Good, preserves the divine unity—while it provides the mediator, namely, in the Idea, or the reason. This becomes identified by Plotinus with the Cause and is substantially the same as the Logos of Philo.

While the Material is assumed by Plato as coexistent with God and as shaped by the Ideas into a cosmos or world; and in Plotinus the Material seems to be something emanating from the One by radiation, and yet becoming entirely discrete from the One, as the sun's ray is discrete from the sun—the possibility of matter thus becoming something real, or having defined form, seems to be solely by virtue of the intermediation of the Idea or the reason as cause.

It has been customary to regard this concept of the Mediator as something mythological and mystical rather than as scientific in any true sense. And while the Christian theology recognizes it as vital in its doctrine of the Trinity yet it has never claimed to give it a strictly scientific value as applying to the creation of the natural world. The Logos or Word is declared in John's Gospel to be that "by which all things were made." Christian theology has devoted itself to showing how the Word became the Saviour of the world, but it has never seriously undertaken to show how the Word actually *created the World!*

The question I have proposed for our discussion at this time is, whether Swedenborg has actually tried to supply this nexus even to scientific apprehension and to do, what has never hitherto been attempted along strictly scientific lines, namely, to explain the production of the Finite out of the Infinite;—and is this the true meaning and purpose of Swedenborg's introducing the term the Only Begotten in its vast and multifold relations to things divine, human, and natural, in his work on the WORSHIP AND LOVE OF GOD?

The Mediatorial office of this conception is illustrated by its introduction almost by exception in this work, which marks the transition from the scientific to the theological period. Its evidently Scriptural origin denotes the taking on by Cosmology of the sacred garments of Theology, or the clothing of the concepts of science with the titles of revealed truth.

Is it this, after all, that Swedenborg really means when he says that now it is allowed *with the intellect* to enter into the mysteries of faith—and that here is really formed the key-

stone to the arch of human learning—the actual and rational guide to harmony and unity of the truths of science and the truths of revelation?

If this is really the case we are surely justified in giving any degree of attentive study to the significance of the term the Only-Begotten, in Swedenborg's *Cosmology and Theology*.

That it occurs but rarely—but four or five times in the theological works and, in the *Cosmological works*, almost exclusively in the *WORSHIP AND LOVE OF GOD*, only adds to the significance of its use in this particular work—which itself is mediatorial between science and theology.

Undoubtedly a popular feeling of prejudice has been roused against the character of the book itself by the mere suggestion of a lingering falsity of doctrine implied in the term Only Begotten as Mediator, just as the same prejudice has been entertained against the much larger work, the *ADVERSARIA*, on account of the frequent occurrence there of the term God-Messiah, as referring seemingly to a second person in the Trinity. One has only to read the work intelligently to learn however not only that the Scriptural titles Only-Begotten and God-Messiah are capable of use in a sense strictly harmonious with the truth, as are all the symbolic terms of the letter of Holy Scripture, but they contain suggestions of the greatest value in solving this ancient and ever interesting problem of the relation of the Infinite and the finite and the manner of their mediation.

It is interesting to trace in Swedenborg's writings the changes in terminology accompanying the progress of this doctrine of the divine mediation.

Beginning with terms of impersonal force, motion and geometry the doctrine assumes more and more a personal character until at last it ends in the grand and supreme conception of the Divine Human.

The mediation is thus traceable alike in the cosmology and in the theology; and these two processes of the divine ultimatum or self-evolution, far from presenting a conflict, will be found to be correspondent and harmonious.

THE COSMOLOGY.

Beginning in the cosmology, as portrayed in the PRINCIPIA, we have the conception of God at first as simply the Infinite, corresponding, by way of comparison, with Plotinus' doctrine of pure being as before or above the good or the Idea of the Good. This, it is true, is the concept of God as related to a created physical world and does not exclude God as related to the human soul and its thought and affection. But that the Infinite is thus treated geometrically and mechanically, so to speak, at the outset gives us a certain assurance that here is a system that will unify cosmology and theology.

With this pure unqualifiable Infinite as the source, Swedenborg evolves the universe by the mediation of the "first simple," the "point" and the "first finite." We must notice that the first simple is itself the product of the self-moved motion in the Infinite. And if (says Swedenborg) the first simple was produced by motion from the Infinite it must also be supposed that in the Producer there was a kind of will (*aliquod velle*) which produced. "The simple is the first entity existing by motion from the Infinite and thus, in regard to existence, it is, as it were, a medium between the Infinite and the finite." (*Sum. Principia*, II.)

Here then we find the mediator in the cosmology and, what is of the deepest significance, it is closely related to—indeed identified with—the mediator of the theology: for the source of both is a certain "WILL in the Infinite." We see later what this Will in the Infinite is. Not only a will to create a world as the object of Infinite love, but to save the world as the object of Infinite Mercy. All this is included in that *aliquod velle* which, in the cold contemplation of strict physics and geometry, is the only approach allowable to personality in the source of the universe.

BIOLOGY.

From this first simple and its resultant succession of finites, actives, elementaries and atmospheres and so a physical universe, we proceed to trace a similar nexus and series of created forms in the animal kingdom where we find the mediation

now to take the form of the vital fluid or animal spirit. This seems to be related more universally to the whole animal kingdom than the soul, which in its three activities or radiations as anima, mens, and animus, seems to be active in man alone.

The animal spirit or spirituous fluid is said to be "that by whose action we live and by its life we act. It enters the blood as the first and highest and most free, full substance of its body, the sole and proper animal force and the determining principle of all things. It derives its being from a still higher substance and principally from those things on which the principles of natural things are impressed by the Deity and in which the most perfect forces of nature are involved. To the body it is the form of forms; to the microcosm it is what the first aura is to the macrocosm" (2 E. A. K. 219). "It is the formative substance" (*ibid*, 220). "It is the prime determinant of the microcosm" (197). "It has a principle in life from the first Esse,—in a word, from the God of the universe" (228, 297).

We see here not only a mediation between the divine life and the entire organic and animal life, but we have a wonderful glimpse into those mysterious laws of Divine providence whereby man is preserved in freedom of action even under the absolute sovereignty of the Divine.

"Through the most subtle pore of this fibre there flows again a certain purely spiritual essence which is the *life of heaven itself* or of the LOVE OF THE SUPREME, born in like manner as the fibre itself from that prior or supreme fibre. From these is now produced a third beginning of a fibre, the form of which in highest beginnings is called *infra-celestial*, and the canal of which fibre is pervious only to that spiritual essence mediating between the life of heaven and the nature of the world" (W. L. G. 219).

THE SIMPLE FIBRE.

Coming now to the human soul itself and to the body as its kingdom, we find that the nexus between the heavenly aura and the spirituous fluid, which is impressed with principles

from the Divine, and the human body, is what is called the simple fibre, which is the entire form and substance of the body (*Soul 2*) and which is a form of such purity and simplicity that it bears in its bosom the supreme essence of life. "For this supereminent fibre, viewed in itself, is alone recipient of or capable of receiving that living essence; wherefore also it is called the soul, or the form of forms" (*W. L. G. 218*).

"From these simple rays which resemble fibres, is produced another beginning of a fibre, by a wonderful kind of infinite circumgyration the form of which in supreme principles or the very beginnings of fibres is called celestial *which is the form of our intellectual mind*.

"Arguing further,—if the simple fibre is an animate product from its very first essence, it follows that there is nothing in the entire animal form going to form it but this essence itself.

"The fluids of various kinds in the medullary fibres and in the bloodvessels, as the serous fluids, do not constitute the form, since the form consists of fibres, but these fluids flow within the fibres and vessels" (*Soul 2*).

The order of the mediating forms of the soul is given as follows (*W. L. G. 220*):

- I. The SUPRA-CELESTIAL: the form proper to the soul.
Anima.
- II. The CELESTIAL, that of the Intellectual Mind. *Mens.*
- III. The INFRA-CELESTIAL: that of the *animus*.

Then succeed the forms purely natural:

1. SPIRAL: seen in the corporeal fibres.
2. CIRCULAR or Spherical: seen in the bloodvessels.
3. ANGULAR: terrestrial and material, serving the fluids and the bloods and also the spirit of the fibres for CORPOREITY.

The mediating forms in their ascending series are thus given (*W. L. G. 220*):

- I. ANGULAR: heavy: inert: unadapted to motion.
- II. SPHERICAL: surface an infinite angle relating to only one fixed point, the centre: accommodated to motion and variation of form.

- III. SPIRAL: puts on a kind of perpetuity or infinity. Since its radii are spires they press not immediately to a fixed centre but to the surface of a certain sphere, which takes the place of a centre—thus are more adapted to motion and variation.
- IV. The INFRA-CELESTIAL: vortical; its spires flow into gyres making circles with poles as in the great sphere of the world.
- V. The CELESTIAL: puts on a higher perpetuity and infinity, having for its centre the infra-celestial form and all its determinable points; hence the resulting ideas of its fluxion are indescribable by words or lines.
- VI. The SUPRA-CELESTIAL: there is only what is Perpetual, Infinite, Eternal, Incomprehensible,—the Order, Law, Idea of the Universe and the Essence of Essences.

It is in the co-ordination of these several series of mediations, of the PRINCIPIA, the ANIMAL KINGDOM and the SOUL that we shall find the true place and significance of the Only Begotten as the mediator between the Infinite and the finite.

We are struck first with the remarkable fact that all of these series, whether of Finites, of Spirituous Fluids, of Fibres, or of the Soul's rays, have their source alike in the one Infinite, and there receive their eternal impress of the END. This is what secures the unity of the created universe and also *what makes human knowledge and science possible.*

We next notice that the impersonal term,—the Infinite,—of the PRINCIPIA, in the later works becomes the Deity and "our Supreme," and at length in the WORSHIP AND LOVE OF GOD, which forms the bridge from the cosmological to the theological system, the designation of the divine becomes "our Supreme Love," or "Our Love," as if the author was writing under the full effulgence of that vision of the Lord in which he received his divine call, and the true knowledge of God as essentially Love and Wisdom.

It is at the meeting point of this Supreme Love with the soul of man that, in theology, the Only-Begotten finds the

mediatorial function which, in the cosmology, has been exercised by the "first simple," the "first spirituous fluid" and "the first fibre." To indicate this place to our vision we may tabulate the series of mediations very tentatively and roughly as follows:

THE ORDER OF FORMS.

I. The SUPRA-CELESTIAL FORMS.

The Supreme: The ESSE: God: The Infinite. Also the End: the conatus or *aliquod velle*—as will-motion. The *Anima*, or Soul: The Spirituous Fluid.

II. The CELESTIAL FORMS.

"Our Love" or the "Love of the Supreme." The EXISTERE. The Divine Love and Wisdom as one, or The Word as "with God." Motion and Form as Idea. Love as Substance assuming its Form in Wisdom and so becoming Creative Word.

III. The INFRA-CELESTIAL FORMS.

The PROCEDERE. Heaven: The Human Divine. The Spiritual Mind. The *Mens*. The Pure Intellect and the Intelligences. The Vortical.

IV. The NATURAL FORMS. The Animus.

The ONLY BEGOTTEN. The Word made Flesh. Finites: the Fibre: the Blood: the Purer Parts of Nature: the Limbus: the Imagination and Memory. The Spiral (the purple border?).

V. The CIRCULAR and SPHERICAL.

The Senses. The Prince of this World. Sensuous Knowledge.

VI. The ANGULAR.

Matter: the Body and Corporeity. The Earths—Fixity.

It is to be noticed that the entire series in either line of descent, physical or spiritual, is a series of forms: the Life is one;—the recipient forms vary; and so life varies according to its reception. If it be said that even with these steps graphically drawn to our vision we fail to see just what is the mediation that take place in the form of the Finite, or, in

other words, how there is an actual passing over of life into that which is not life, or the creation by Life of that which is not itself and consequently is without life, is it not because here undoubtedly the words fail us? For all our words depict finite conceptions such as belong to our minds and they do not and cannot describe things that belong to the Infinite or even that describe the merging of the Infinite into the finite. The most we can do is to reflect on our own actual experience in living which is *a constant experience of just this sublime mysterious mediation*, the influx of life into matter and the reflex action of matter upon the life.

Every idea awakened by vision or by sound is an instance of this leap of material idea over the bound of sense into the world of spirit; and the boundary, whatever you call it, is a mediator, whether a First Simple and Point, a Supreme Fluid as a Form of Forms, a first Fibre, or finally the Only-Begotten, the Divine Human, the Word of God made Flesh.

To speak now more particularly of the Only-Begotten as the Mediator and as presented in a dramatic and most striking manner in the *WORSHIP AND LOVE OF GOD*, we read in that work that the heavenly life is from the Love of the Supreme but the Natural life from the Prince of this world; and that this prince is kept in subordination only by the downflow of the heavenly life. The medium of this downflow is the Only-Begotten or the divine Prince of the Heavenly life.

"For the Supreme never passes into the lower except by intermediates which are ladders and steps by which descent is made from heaven into nature. . . . Our Love with his celestial life never passes into our nature except by that never-ending life. To this end a spiritual fountain (heaven or the intellectual mind) was made and a natural soul given it into which both the life of heaven and the nature of the world may be introduced and the two, as by a bridge between, may be held together.

"But because that bridge [the Human Divine or the God of the immediate Knowledge of the most ancients] was broken and, as it were, carried away [*i. e.*, by the destruction of the perceptive faculty by the fall of man] our Love, as

thou hast heard, cast Himself headlong into the midst of the furies that He might claim human minds for heaven. Therefore also power was given Him by the Supreme to restrain and rule that enemy at pleasure. The same thing is also now and perpetually being done.

"By this method that connection is restored and minds are claimed for heaven so that our Love flows in with heavenly life into the universal nature of our body" (p. 197).

THE ACTUAL INFLOW.

"The proper form of the natural life *in the beginnings of the fibres* is that of the infra-celestial flowing like a vortex into such gyres that delineate great circles with their poles, as in the great sphere of the world. By variations of its form or changes of state, that life produces our material ideas and determines the will into act.

"There are also lower forms proper to nature [angular, spherical, spiral] which are actuated by the fibres with their spirit, and by the vessels with their blood" (p. 131).

The series of life-stages and the order of influx is thus given:

"The only Order is the Order which the Most Wise, who alone Is and Lives, has prescribed and instituted from Himself. The Order in all things that constitute substance and that result in acts is: that

"Supra-celestial life flows into heavenly life:

"The heavenly life by a mediating life into the life of nature,—even to its boundaries—from the last of which it revolves back again to its first principles by acts of putting off, as, in its descent, by acts of putting on" (p. 236).

"Supra-celestial life is the life of the Supreme Himself. Heavenly Life is the life of this Only-Begotten or Love:" [Word with God?].

"Mediating life is the life of him who, being made the connecting medium of life and nature, afterwards revolted. But nature is what has no life" (p. 237).

"The Gyre of the Order of life is:

"From the Supreme who is the veriest Life Itself, through

His only Love [the Word with God?] and thus through heavenly life and from this through natural life into nature herself and then back from nature through the same natural life to heavenly life, but by the continual puttings-off, and thus through the only Love to the Supreme or the veriest Life itself" (p. 238).

THE PURPLE BORDER.

At length we come to that most interesting and remarkable figure of the Purple Border (p. 251) surrounding the spacious Centre of Light as beheld in vision by the first married pair. It is very significant, not only as marking the bridge by which the soul becomes in touch with time and space and so with nature, but also as giving the cause of the redemption of the human race by means of the incarnation of the Divine and the control thus assumed over the hells of evil and of disorder. The vision is that of a bright and spacious centre about which is a border purple from brightness and flamy. It glitters with a translucent beauty tinged with a Tyrian line, a circle of gems. This border was surrounded by a circle of pure fire, which circle was presently changed into one of brazen and iron color. Of this remarkable figure we read (p. 263):

"The splendor of that Light, or the Glory of that Life which poured itself to the ends of the Universe, that is, through ages of ages from eternity to eternity, could not be communicated to our minds and still less to the other or lower powers of our lives without manifest danger of death. For what else would result from a communion of the Infinite with finite beings, or of the most Holy and First with us who live from the dust and in it, but that we should be accused of impurity by its holiness, condemned by justice and sentenced to death? Therefore He begot His Image or Son from eternity through whom, or through whose life, He might flow mediately into the faculties of the life of our body, who, because He was born the mediation and the one Only Love of the Supreme, it is his Life which is signified by the flamy Border, purple in its brilliancy, which appeared round about this most bright and spacious Centre. This is

the life which is properly called heavenly and which excites the understanding and will of our minds. For our life is two-fold, heavenly and natural, and both are derived from the only life of the Supreme. Natural life without the mediation of heavenly life is not life but spiritual death in likeness of life."

"As that lovely Border with its light and flame represented heavenly life with its purest Love, so the fiery circle encompassing it represented the infra-celestial life with its grosser love. Immediately adjoined to nature it [the animus] is called natural and animal; the faculty in which it lives is called the animus from its loves and affections which are called lusts and passions" (p. 275).

"But the circle is changed into a brazen and iron color because the Prince of this world who was made to be the connecting link between heaven and the world was the controlling power in our bodies: presiding over the spirit of the fibres and the blood of the vessels and immediately opening the gate into the nature of the body. This Prince of this life was made for this most excellent use and set over the world and joined to our Supreme by means of the heavenly life, or that of His Love. In the beginning he was obedient to all commands and performed the duties enjoined upon him; but afterwards, captivated and enticed by the unbridled love of self and the world, and inflamed by the insane lust of arrogating even Heaven to himself, he altogether revolted from the Supreme and His Love. Heavenly life therefore receding, the connecting medium between the Supreme and nature was torn away and the life of that prince was turned into an image of death, and the light of that life into shade. Therefore that purely fiery circle was observed to pass over into a brazen and an iron color" (p. 276).

"Finally—the inhabitants of heaven, called Intelligences and Wisdoms, or minds in a human form, are the servants and attendants of their Prince,—the Only-Begotten of the Supreme, who, because of Him, live in Heavenly light and pour a similar light into human minds. Thence is also their intelligence of truth and their wisdom of good. These are they who, under

the auspices and will of their Prince, because they preside over human minds, govern the decisions and therefore the destinies of that Grand Body of human societies. For he who rules minds rules also their bodies since these are obedient to the understanding and the will of their mind. Wherefore it is Heaven by means of which the Supreme directs and leads the courses of His Orbit to the last goal of ends" (p. 273).

"The Omnipotent by a single nod of his will could thrust down headlong that tyrant, the prince of the world into Tartarus and Orcus, with all the minds subjected to him, and this justice itself ordained. But hear now, a wonderful thing! When in the very act of striking with His lightning, our Love, His Only Begotten, cast Himself headlong into the midst of that rage or among the very furies of the devil where the stroke of the lightning fell, and embracing with His arms those human minds suffered Himself to be almost torn to pieces and destroyed by that Cerebus of Hell. At sight of this, our Supreme laid aside his lightnings, lest he should devote his Only Begotten to his most just anger, and entreated Him to depart: but He, the Only Begotten, burning with the fire of love, entreated that those human souls might be spared or that He might be destroyed with them; saying that He was willing to suffer the penalties of justice and take the blame of the guilty—adding to His supplication, that He might not be left alone in the world. Upon which the Most Holy Parent was so affected that He abated the flame of his justice and was compelled, out of Love, to promise "that the world should run its course to the end," at the same time that He gave power to our Love—the Only-Begotten—to bind and loose at pleasure, that tyrant his enemy" (p. 188).

NOT A VICARIOUS ATONEMENT.

Such is the symbolic form in which Swedenborg here defines the jealous care of the Divine in securing the moral freedom of the human soul. A careful study of all its psychological implications—for it is a picture of mental forces—the "intelligences" of heaven in conflict, on the border line of the spiritual rational, with the sensual influences of the world,

—will throw much light upon the subject of our Lord's own temptations and combats in the human which He had put on and into whose raging passions He had descended that He might calm them, give them liberty and dwell among them as a Prince with his willing subjects.

The idea entertained by some of the earlier readers of this work, and perhaps by some at this day, that Swedenborg is here writing under the influence of the falsified dogma of the vicarious atonement, and that this grave doctrinal error is sufficient to deprive the entire work of any theological value, is one that is not borne out by Swedenborg's actual picture or its application. The whole treatment is symbolical and the language is mythological as describing spiritual and natural mental forces in the form of persons—and using as their theatre the entire inmost structure of the human body, especially the spirituous fluid and the fibre. The very scene and setting, we may say, is Olympic and Cosmic rather than dogmatic and theological.

At the same time there are introduced the six great outstanding terms or characters which are fundamental both to the Cosmological and the Theological system:

- I. The Supreme.
- II. Our Love.
- III. Heaven—and the Intelligences.
- IV. The Purple Border and the Only Begotten.
- V. The Iron Border and the Prince of the World.
- VI. Nature and the Body.

These are all related to the respective planes of the Soul, the *Anima*, the *Mens*, and the *Animus*, and so have as their field of operation or action the human being or person.

The choosing of these terms, the Only Begotten and the Prince of the World, is, however, what forms an indestructible bridge between the system of psychology here set forth and the revealed truth regarding God, Man, and the Divine Human. The Prince of this world as here presented makes more humanly and actually real both to our human experience and to scientific recognition, that power described in our Lord's words, in relation to his own temptations and his work of redemption:

"The Prince of this World cometh and hath nothing in me:" "The Prince of this world shall be cast out:" "The Prince of this world is judged." And the tender name of the Only-Begotten, Our Lord, the Love of the Supreme,—as the very bond of Infinite and Finite, the very cause of creation, the very medium of salvation to all eternity will remain forever allied with the sublime words of the Gospel.

"The Word was made flesh and dwelt among us and we beheld His glory, the glory as of the Only-Begotten of the Father full of grace and truth" (Joh. I. 14). "No man hath seen God at any time: the Only Begotten, which is in the bosom of the Father [*i. e.*, the Love of the Supreme]. He hath declared Him." "For God *so loved the world* that He gave his Only Begotten Son, that whosoever believeth in Him should not perish but have everlasting life: for God sent not his Son into the world to condemn the world but that the world through Him might be saved."

CONCLUSION.

To conclude in a word, the Only Begotten is the proceeding of the Infinite to the Finite and the manifesting of God to man through the medium of that which is at once divine and Human: It is the Word which in the beginning was God and with God, but which more and more clothed itself with human form in the heavens and in the natural world until at length it became flesh in assuming our nature on earth. This it glorified with the glory which it had from the Father from the beginning, and so it became and remains forever, the declaration of the Father, the DIVINE HUMAN OF THE LORD.

DISEASES OF THE FIBRE.

CHAPTER VI.

APOPLEXY, HEMIPLEXY, PARAPOPLEXY, PARAPLEXY.*

404. *In order that we may know all the species of apoplexy and their causes it is necessary that we know from the most searching exploration what office is performed by the cerebrum, what, properly, by the cerebellum, what by the medulla oblongata, and what by the medulla spinalis; what connection they hold with each other; how one or the other flows conjointly and also separately into the muscles, and consequently into the viscera of the body. From the anatomy of the cerebrum it is evident, that the CEREBRUM, or its cortical substance, which, properly speaking, takes the name Cerebrum, is the COMMON SENSORY; for the five organs refer their external sensations to the cortex of the cerebrum as to their common and sole internal sensory. The CORTICAL CEREBRUM is also the common VOLUNTARY MOTOR; for whatever is to be done by the mediation of the nerves and muscles must first be determined in the will by the cerebrum. THEREFORE THE CEREBRUM IS THE COMMON SENSORY AND THE COMMON VOLUNTARY MOTORY, AND, IN FACT, THE PRIMARY AND PRINCIPAL. But the CEREBELLUM is not a sensory, or is only a most general and obscure one to which no particular idea, such as comes to our consciousness, is represented except by the effect. Hence the cerebellum is called the common spontaneous, natural and involuntary motory whence come those actions which are called instincts. Thus the CEREBELLUM IS THE PRIMARY AND PRINCIPAL COMMON SPONTANEOUS MOTORY; and the difference between it and the cerebrum, is of the same nature as the difference between the voluntary and the spontaneous natural;*

*HEMIPLEXY is the paralysis or lower half of the trunk; PARAPLEXY, paralysis of the lower limbs; PARAPOPLEXY, paralysis of the

or between that of which we are made conscious and that of whose origin, progress and effect we are wholly ignorant. The MEDULLA OBLONGATA, on the other hand, partakes both of the fibres of the cerebrum and of those of the cerebellum; for fibres from both these organs are brought down into it, and of these, as also of its own proper fibres, it is made up. This medulla is, as it were, a medium uniting the cerebrum and cerebellum and a medium simultaneously transferring the sensations of the five external organs to the cerebrum, and the hidden operation of the viscera to the cerebellum, and also the decisions and commands of both to the muscles. It may be called A COMMON SENSORY AND MOTORY BOTH OF THE CEREBRUM AND OF THE CEREBELLUM, BUT A SECONDARY ONE, AND A SUPERIOR INSTRUMENTAL. So likewise the MEDULLA SPINALIS, which is structured of fibres of the cerebrum and cerebellum and also of its own, deserves to be called a COMMON SENSORY AND MOTORY, BUT A SECONDARY ONE, AND AN INFERIOR INSTRUMENTAL, in that it is nearest to the body.

405. Moreover, we ought also to know what connection the cerebrum, cerebellum, medulla oblongata and medulla spinalis maintain with each other. The connection can be explored from the connection of the membranes, sinuses, arteries, and fibres. From this it is evident that these four viscera of the encephalon, or superior kingdom, that is to say, the cerebrum, cerebellum, medulla oblongata, and medulla spinalis, are so mutually inter-connected that the cerebrum can act into the cerebellum and, conjointly with this, into the medulla oblongata and medulla spinalis; but then every action is called voluntary,—action which is done in the daytime or in wakefulness. Likewise, that the cerebellum can act into the cerebrum and, conjointly with this, into the medulla oblongata and medulla spinalis,—but every action thence resulting is called spontaneous-natural, such as takes place at night or in sleep. Further, that the cerebrum and the cerebellum equally vindicate to themselves the right of acting into the underlying medulla oblongata, that is, into the annular protuberance and the olivary and pyramidal, and consequently into the nerves

springing from these protuberances; but that the cerebellum asserts to itself a fuller right of acting into the fourth ventricle, the region thereof, and the subjacent medulla spinalis,—which latter can be excited generally by the cerebellum, but not so by the cerebrum except in particular, and by means of the cerebellum. But these points will come up for demonstration in the Transactions on the Cerebrum and its Membranes. Meanwhile, without a previous knowledge of the whole brain we can never deeply explore the causes of apoplexy, epilepsy, catalepsy, hydrocephalus, coma, and many other diseases. With these premises let us now enquire as to apoplexy and its species.

APOPLEXY.

406. APOPLEXY is the impotency of the common sensory and the voluntary motory, that is, of the cerebrum and, in fact, of its cortical and cineritious substance, to sensate and act, that is, to receive by means of the fibres the images of the organs of the five external senses, and to excite from previous will the muscles to action,—the life and motion of the cerebellum nevertheless remaining, and consequently the life and motion of part of the medulla oblongata and likewise of the medulla spinalis. Thus apoplectics, deprived of the use of the better corporeal life, live only in the blood and body, except as regards an obscure life which emanates from the cerebellum and the underlying medulla spinalis and which is like to our life during sleep and in the mother's womb, nor is it much unlike death; for they no longer retain anything of themselves as their proprial own,—which is inmost thought or sensation, and will which is the beginning of action. But since the cerebellum does not succumb, there still remains the pulsation of the heart and arteries, which is stronger than ordinary; and likewise the respiration of the lungs, loud and stertorous as in deep sleep. For the cerebellum with the medulla spinalis claim for themselves the empire of the heart and also of the lungs, since the fibres of the pericardium and of the cardiac muscle itself, and also the fibres of the pulmonary plexuses and likewise of the intercostal muscle, belong equally to the cerebellum and the

medulla spinalis; for they belong to the intercostal nerve and to the eighth pair of the head, and also to the dorsal nerves.

407. All causes which render the cortex of the cerebrum impotent of action, that is, of animation or respiration, produce principally apoplexy of the whole body, that is to say, of the sensory and motory organs in as far as they are voluntary. The faculty of animation is the very life of the cerebrum; for by means of animation the cerebrum receives sensations and carries out motions; and indeed by means of the animal spirits which run through the middle of the cortical glands and through the medullary and nerve fibres. For, with the quiescence of the cerebrum, the animal spirit, which is the purer blood, runs no better through the fibres than, with the quiescence of the heart, the blood runs through the arteries.

408. These causes are many. The primary cause is obstruction in the trunk of the internal carotid before it is divided into branches,—and this whether the obstruction happen outside the cranium, or in the passage through the bony foramen,* or anterior or posterior to the swelling formed by the carotid in the *receptacula cavernosa*.* If the carotid is obstructed in its further course, that is, in its branches, there arises, not general apoplexy but only apoplexy of one-half of the cerebrum, or of a single part in one hemisphere. Respecting these species of apoplexy see below.

409. But the causes of the obstruction are many; to wit: an abundance of glutinous, viscid, gross, cold, inert blood which stagnates at the entrance; the connate or acquired presence, in these arteries, of tumors, scirrhus growths,† abscesses, fatty tumors,‡ and many other obstructions which stop up the artery from within or compress it from without. The carotid artery is proper to the cerebrum, while the vertebral artery is proper to the cerebellum and likewise to the medulla ob-

*The carotid canal of the temporal bone.

†*Scirrhi*.—A *scirrhus*, from a Greek word meaning to harden, is a hard tumor which in the be-

ginning is without pain but is apt to degenerate into cancer.

‡*Steatomata*, sing. *steatoma*, from a Greek word meaning tallow, fat.

longata, and in part, to the medulla spinalis. When the vertebral arteries remain entire, the cerebellum and the said medullæ enjoy their ministering blood and carry on their animations even when the cerebrum is quiescent as if it were absent. But of these arteries, only a very little part ministers to the cerebrum, in order that it may derive some feeble life, but not sensitive and voluntary; for the vertebral artery so communicates with the carotid artery that the one inflows into a branch of the other and lives from the blood of the other.

410. *Although this is the primary cause of apoplexy still there are other causes which affect the cortical cerebrum in like manner, and they are several in number; but they all look to that primary cause as the cause proper. For the cerebrum, by the force of its animation, attracts blood from the cavity of the carotid,* but the heart does not intrude it upon the cerebrum. Hence, whatever inhibits animations in the cerebrum, this also inhibits the drawing up of blood from the carotid artery and from the vertebræ.*

411. *Such as viscid serosity, sluggish phlegm, and also extravasated blood which, collected within the pia mater and between the larger windings and lesser folds, and poured around the cortical glands, deprives them of all power of acting, of unfolding and constricting, that is, of animating. Such a condition arises from an immoderate secretion of malignant blood, from inflammation, and from impeded discharge; and these again from their causes which are still more remote and which yet are the sole causes to be remedied. The paths of discharge are many in number, as for instance, through the veins into the larger sinuses, through the cribriform plate into the cavities of the nostrils, and into the nerves as respects their fascicles; and these paths are closed more strictly and the phlegm of the cerebrum increases more largely when, in addition, the paths for the general excretions are not open, as [for the feces and urine] through the bowels and bladder, for the saliva through the*

*i. e., the swelling referred to in as to this swelling see 2 E. A. K. n. 400. For anatomical authority 18.

cavity of the mouth, for the menstrual flow. When these paths are closed the cerebral cortex is inundated and also the cerebral medulla; and then, by reason of these two inundations, if the flow is tenacious and sluggish, the animatory force is stopped and thus the afflux of arterial blood; and consequently the sensory and motory force of the cerebrum; whence arises apoplexy.

412. Moreover, a viscous and copious flow between the dura and pia mater produces a similar effect. For the intercepted humor so compresses the arachnoid tunic and its subjacent pia meninx together with the arteries and veins lying between them, that the cortical substance can by no means be elevated, that is, can by no means engage in its alternations of animation.

413. A similar effect also results to the cortical substances of the cerebrum if the three cerebral ventricles, to wit, the two larger or anterior and the one intermediate which is called the third, are filled with so great an abundance of serum that the cerebrum is unable to determine or pour out the forces of its animation towards interiors. When the cerebrum is expanding and constricting it unfolds itself either outwards or inwards, that is, it tumescens or detumescens,—for there is room in both directions; for which end also are the ventricles and the space between the meninges. If there is no opportunity of tumescing or unfolding outwards, and if at the same time there is no opportunity of detumescing or folding inwards, the whole faculty of animation, that is, of sensation and voluntary action is entirely taken away from the cerebrum.

414. It is also a cause of apoplexy if the dura mater so thicken and flow with humor and become flaccid as to lose all its faculty of elasticity and reaction; or if this mater become indurated; and also if, being loosened from its connections with the cranium, its whole weight rest on the pia meninx and thus on the cortical cerebrum,—of which effects there are many causes. For the dura mater is like a spring or cord which reacts to the extent that the cerebrum acts. When the cortical cerebrum swells out in tumescence it will not again

subside, if there be nothing present of a reactive nature, but remains in a state of inaction, and consequently in the privation of sensation and voluntary action. Thus it neither takes up the arterial blood from the carotids nor drives the uptaken blood into its own veins and sinuses. Neither do the sinuses themselves receive the blood; for they belong to the dura mater and are contained in its duplicature; nor are they actuated into alternations except by the motion of the cerebrum.

415. Meanwhile, the province of the cerebrum, although coterminus with the province of the cerebellum is so separated therefrom by septa formed from the dura mater and attached to the cranium, that the cerebrum performs its own offices in a distinct manner, and in a distinct manner the cerebellum; nor do they concur except in guarding the safety of the whole corporeal system. The cerebrum enjoys its own arteries, that is, the internal carotids, its own ventricles which are three in number, its own medulla, its own cortex, its own pia mater, and its own sinus which is the longitudinal; the cerebellum also enjoys its own arteries, that is, the vertebral, its own medulla, its own cortex, its own pia and dura mater, its own ventricle which is hollowed out in the stem of the medulla oblongata, and also its own sinuses. Thus the action of the cerebrum may be stopped while the action of the cerebellum still goes on. And therefore apoplexy is an affection of the cerebrum; as soon as it becomes of the cerebellum, it is at once deadly or death. Thus a malignant and hostile humor collected between the meninges and windings of the cerebrum and in its cortex, medulla and ventricles, does not invade the cerebellum; nor does it break out in the direction of the medulla spinalis unless the bars have been broken down; and so neither can it stop above or around the cerebellum since the path of exit opens through the foramen magnum of the occiput into the vertebral sheath at its posterior portion.

HEMIPLEXY.

416. HEMIPLEXY or HEMIPLEGIA is a similar privation of animation, consequently of sensation and voluntary determination, of one-half of the cerebrum, or of one of its hemispheres.

The motion of the cerebrum should be conceived of according to the partitions of its cortical substances as being both general and special and also particular, consequently as being variously subdivided. For the cerebrum is partitioned into its hemispheres, these into their lobes, these into their serpentine tracts, these into their protuberances, these into their clusters, and these into their spherules which are again partitioned into lesser spherules and least. Hence also it is gifted with the faculty and capability of expansion in general, in special and in particular; for the whole can be unfolded, or a single lobe or a portion of the cortical substance. Wherefore, if one-half or one hemisphere, or if one lobe, should become torpid from some grave obstruction, the other hemisphere or the other lobe might be actuated into alternate motions; and if this can be so actuated then also can one or other of the serpentine tumuli.

417. *Thus if the carotid artery in the larger branch which leads to one hemisphere be obstructed with an abundance of glutinous, viscid, gross, cold, inert blood; or be stopped up by fatty tumors, polypi or excrescences; or be compressed from without; or if viscosity beset the cortical gland round about; or the pituitous serum around the fibres or collections of fibres in the medullary substance grow sluggish in the windings, conglutinate the folds, stop up one of the lateral ventricles, be collected between the meninges on one side of the longitudinal sinus; or if the dura mater, being too flaccid, should be remitted, or, being indurated should grow rigid,—then action is destroyed in the one hemisphere, whence arises hemiplegia.*

PARAPOPLEXY.

418. *PARAPOPLEXY, on the other hand, arises when one or other of the divisions of the cortical substances is infested with these same ills. But in parapoplexy a still greater number of causes may concur; that is to say, besides the fluid glue collected in some place under the dura mater, the adherence*

*According to the Latin this verb is in the singular. should be in the plural; but the

of the latter to the cranium or its loosening therefrom, and the cohesion of one of the windings or sulci, there is, in addition, the possibility that by means of a like viscid humor the beginnings of the nerves may cohere together in their exit from the cranium and, after their exit, in the body, that is to say, between the fascicles. Hence arise tumors, sinuses and hollows, even in the ganglia and also in the muscles, namely, in their fibrous offshoots. A similar effect results from the compression, ligation, lesion, erosion, or amputation of the nerves.

PARAPLEXY.

419. PARAPLEXY or PARAPLEGIA derives its originating cause, not from the cerebrum, but from the medulla spinalis. For the whole body below the neck, or all the muscles whatsoever that are approached by the spinal nerves, are seized with apoplexy while the senses of the head remain entire, and also the free power of acting into their muscles. This disease arises from similar causes in the medulla spinalis as those mentioned above as existing in the cerebrum, with the difference that results from the difference between the fabric of the medulla and that of the cerebrum.

420. Meanwhile, since the connection between the medulla spinalis and the cerebellum in man is such that the one can hardly be moved without the other, for the spinal nerves from the dorsal region flow into the muscles that serve the respiration and the intercostal nerve into the heart, vena cava and aorta,—which nerve is indeed sent off by the cerebellum but passes through the spine,—hence it cannot but come to pass that this species of apoplexy, if it degenerate into apoplexy soon becomes mortal; but meanwhile the heart and likewise also the lungs live for a short time by means of the eighth nerve of the head.*

*The par vagum.

CHAPTER VII.

SLEEP, CARUS, LETHARGY, CATAPHORA, COMA FEBRILE, COMA VIGIL, WAKEFULNESS.

421. *Sleep occurs when the cerebrum relapses into its natural state, such as it had maintained in the mother's womb, and rests from the emotions and affections of its animus; then, together with the cerebrum, collapses also its windings and sulci, and the spaces between the cortical spherules and medullary fibres. This is indicated by the tranquillity and innocence apparent in the face, and at the same time by the respiration of the lungs as being more regular, slow and deep, and not subject to the arbitrament of the will. Meanwhile, when the cerebrum quiesces the cerebellum moves and animates. Thus at night or in sleep the cerebrum relinquishes the reins and delivers them up to the cerebellum; and the latter, left to its own law, by means of its fibres and those of the medulla spinalis then actuates the pulmonary machine, and also the cardiac, into their alternate reciprocations; at the same time it actuates the muscles of the body, and when it flows into all these there results a complete equilibrium of the whole. From the cause of sleep and wakefulness and from other connected phenomena, we learn by diligent anatomical study: that the cerebrum, by means of the medulla oblongata and medulla spinalis flows into all those muscles that are moved voluntarily; likewise also the cerebellum by means of its fibres; so that the fibres of the cerebrum, cerebellum and medulla spinalis proceed conjointly in one nerve, and prudently unite in the muscles themselves; but that the cerebellum acts into still other muscles, and indeed in such way that while it actuates one muscle it at the same time actuates another, even when the two are antagonistic; and because in this way one muscle cannot be excited against another, as is usually done by the cerebrum, there arises an equilibration of all the muscles. Hence comes alternate rest and unrest, that is to say, the cerebrum sleeps while the cerebellum is awake and vice versa. It would be certain death if both should sleep, and uncertain life if both should rule equally at the same time.*

422. *In sleep, whatever voluntarily excites the muscles and disposes the organs of the senses so that they distinctly receive and carry down the modes whereby they are affected, lies flat and prone. Thus sleep is the temporary death of voluntary actions and of sensations. Consequently sleep is an affection of the cerebrum alone, which is both the common sensory and the common voluntary motory. But as to how the cerebrum is affected, this must be learned from the minute anatomy of all its parts, as of its substances, meninges, members, and of its connection with the cerebellum and with the subjacent medullas. The cerebrum is divided into hemispheres, into convolutions like those of the intestines, and these into their convolutions most exactly discriminated by furrows and ridges. One fold, commissure and duplicature passes subdivided into another, scarcely other than as the great artery ramified into its lesser and least arteries. When all the partitions and ramifications of the cortical cerebrum yawn open distinct and rightly discriminated, that is to say, when the cortical cerebrum is so expanded and erect that there is an open passage from one furrow or fold into another, then the state is that of its wakefulness, attention and intentness. But when the cortical cerebrum is collapsed, that is to say, when one congeries of the cortical substance is incumbent upon another and the discriminations are almost obliterated, then the cerebrum is in the state of its sleep, obscurity, insensibility, and indeterminability, that is, in impotence to will action and to sensate. For TO WILL is to determine into act that which has been concluded, there being at hand the desire of some end in the mind, or the lust of something present in the animus. But SENSATION in the cerebrum is the perception of images and modes which flow from below into the mind from the external senses and from the memory. The cerebrum cannot determine into act that which it wills and strives after, unless it perceives what is to be striven after; for according to the nature of the perception of sensations such also is the nature of the will of action, and vice versa. For PERCEPTION, THOUGHT, JUDGMENT, CONCLUSION, WILL, and DETERMINATION INTO ACT are in one series, first succes-*

size and then simultaneous. If the first in the series is intercepted, the last also perishes, for this depends on the first through the mediates. So also if the last perishes, progression from the first is at once stopped, and thus the existence of the first in act.

423. Therefore if we now demonstrate that the state of the cerebrum in sleep is such that it cannot perceive, or that it cannot determine into act the desires of its will, it amounts to the same thing. That the cerebrum may be able to determine into act what it wills or desires it is necessary that it be in a condition to move its single individual cortical substances or their congeries which are distinct or separate from each other and which excite corresponding muscles in the body. If the cerebrum collapses and by the collapse obliterates its distinctions, then, assuredly, the cerebrum cannot rule over any muscle in particular but only over all in general. Impotence to effect single individual motions or determinations is what is called sleep. In order therefore that the cerebrum may go to sleep it is necessary that it close up and collapse and thus, as regards its single individuals, extinguish its ability to act.

424. But it is in every way important to know the nature of the state of the erect or expanded cerebrum, that is, the state of wakefulness. Every emotion or affection of the animus elevates, erects, unfolds, that is, awakens up, the cerebrum. Gladness, exhilaration, nay, ambition and any like heat, expands the cerebrum in every direction to the utmost corners of its cranium. The fact that the cerebrum then tumescens is apparent from indications and from the very sensation. On the other hand, sadness, humility, the privation of hope desired, constricts the cerebrum not unlike as anxiety constricts the breast and pain the nerves. Anger and fury and like insanities pour out the cerebrum in divers forms and confuse it with a copious unchosen and malignant blood. It is affected in other ways by other emotions of the animus such as revenge, envy, fear, foolishness, love,—of all which we shall speak in their own places. That the general states of the cerebrum are so numerous, we see exhibited to the life in each

person's countenance which is an index of the mind (*animus*); and especially do we see it from the state of the respiration of the lungs which is wholly synchronous or coincident with the animation of the cerebrum. For the respiration of the lungs is sometimes constricted, sometimes exalted, sometimes variously confined or expanded, to wit, is strong, weak, rapid, slow, tacit, or gentle, in every way like as the cerebrum carries on its animations; in like manner the lungs apply and accommodate themselves to all the nods of the will of the cerebrum, or to its several animations, for the moving of the muscles or the production of actions. These are the general states of the cerebrum from which it rests, or from which it relaxes into its natural state when it begins to fall asleep.

425. The cerebrum relapses into this its state when, after the obliteration of its distinctions, the cortical substances close up or collapse; for thus perishes the distinct or diverse elevation or animation of the individual congeries of the cortical substance, and in place thereof succeeds a general animation, or an animation of all the parts of the cerebrum,—an animation that is indiscriminated, one or simultaneous.

426. As is the animation of the cerebrum such is its life. Individual animation, or animation of the single individual parts under the general, gives a distinct life, that is to say, a life potent for sensating, willing and determining the several things into act; for, as was said above, each single cortical protuberance corresponds to its own muscle in the body, which muscle the cerebrum excites by the individual elevation or animation of its cortical substance. General animation on the other hand gives a general, undivided and obscure life like that of the sleeping cerebrum and also like that of the wakeful cerebrum. Therefore whatever deprives the cerebrum of this power of animation, also deprives the cerebrum of the faculty of sensation and volition.

427. In the state of sleep, moreover, the red blood is restrained from approaching too near to the individual cortical substances, and is detained at a distance from them according to the degree of the slumber; for it is animation that draws the blood from the arteries and invites it towards the cortex;

and therefore as is the animation such is the afflux, distribution and circulation of the blood in the cerebrum. Thus in sleep the blood brushes the outmost surface of the pia meninx, nor does it penetrate into the interiors of the cerebrum except by the more open paths, through which also pass the trunks; for it cannot penetrate towards the substance of the cortex through the winding folds and commissures, since these are constricted and collapsed.

428. From these considerations it is apparent what are the causes of sleep; every cause, namely, that inhibits and extinguishes the individual animation of the cerebrum and that restrains the blood from the cortex; for the cerebrum then collapses of itself and begins to fall asleep. The causes of sleep therefore are silence, ease, profound peace of mind, restfulness of the animus, lassitude, Venus, a soothing influence (spiritus), pleasant harmony; somewhat sluggish blood, a defect or large emission of blood, external compression of the cortical cerebrum, internal obstruction; these latter however are the causes of morbid sleep.

429. But among the primary causes of natural sleep must be placed the very necessity of the kingdom, that is to say, the necessity of restoring during the night what has collapsed, that is, has been destroyed or disturbed, in the daytime. For what the will destroys, this nature repairs; or, what wakefulness disturbs, this sleep recomposes; or, what the cerebrum confounds, this the cerebellum renders distinct, and what the cerebrum constricts, this the cerebellum relaxes; and also vice versa. Thus unless the one acts and the other suffers alternately, that is, without sleep, the animal machine would not long cohere. Necessity itself notes, admonishes and as it were solicits, that the cerebrum, distracted and oppressed with weariness, should relax, and that the cerebellum, having taken its rest, should now rise unwearied and exert itself. And when the circulation of spirits, blood and humors, the economy and the universal state of the corporeal life, and especially of the cerebrum, has been restored, then the cerebellum abdicates its empire and restores it to the cerebrum, or, the cerebrum, become awake, spontaneously resumes it. From

*this it follows that among the causes of sleep is also anything that strongly excites the cerebellum. That the cerebellum when left to its own law of action, that is, when the cerebrum is quiescent, animates more constantly, evenly, strongly and gently, in the degree that it animates more deeply, is a matter which we shall learn from the anatomy of the brain.**

430. *From the above considerations it is apparent: Why infants sleep more than adults, and the aged with greater difficulty. Why from too much sleep comes somnolence, dullness, stupor, weakness of memory, obesity, inaptitude for motion; that is to say, a more difficult erection of the cerebrum and unfolding of its convolutions. Why, when we are roused, we stretch the limbs, unfold the muscles, desire to sleep. Why the grosser kinds of nutriment have a soporific effect. Why, when we are heavy with sleep, the muscles gradually waver, first the eyelids and eyes, then the face and neck, then the arms and finally the feet; for the operation begins in the vertex of the cerebrum and descends by degrees.*

431. *But to resume. Each cortical gland, which is a little internal sensory, a little cerebrum in least type, and a symbol of our rational mind, sometimes continues, unchanged in sleep, in its own general state, which is a particular state relatively to the general state of all the glands, or of the whole cerebrum; for the state of the single individuals or parts, and the permanence thereof does not impede a change of the general state of the compound, as is well known in physics. (Confer Transaction I, n. 287.) Just as all affections of the animus change the general state of the cerebrum and induce upon it a form suitable and accommodated to their own modes of action, or to their own nature, so all the desires of the mind, which have regard to some end, are so many causes that, in like manner, change the state of each cortical substance of the cerebrum and induce upon each in particular a suitable form. If these states continue or are changed in sleep the result is the excitation of dreams, visions, phantasms, divers appearances,—all which are so many representative images in the mind from the soul according to the state*

*In the Latin this is printed in italics.

of the cortical substances and according to the ratio of influx into the general state of the cerebrum where are matters of the memory and images.

432. Reducing now the scattered causes of sleep, both natural and unnatural, to a unit, they are: I. Those that take away the individual animations of the cortical substances of the cerebrum and reduce them to one general indiscriminate animation. II. Those that detain and restrain the arterial blood from the cortex of the cerebrum. III. And, more particularly, those that fatigue the cerebrum and render it inert for action, while making the cerebellum active and alive. IV. The effect is, that the cortical cerebrum which is the common sensory and voluntary motory, begins to collapse and, by mutual application, to cohere as though not divided and distinct; consequently that the corresponding muscles in the body are not excited by any particular and individual force but all are excited simultaneously by a certain general force.

CARUS.

433. CARUS is an unnatural sleep of the most grievous kind; those seized with it are as though living dead, and even when roused up they at once sink back with uplifted eyelids.

434. From the symptomatic signs it is apparent that the cause of this morbid sleep is the too dry and heated nature of the red blood so that the globules or clots stick indissoluble in the smallest vessels; and when the vessels are thus obstructed the cerebral cortical substance which is the common sensory and motory is deprived of its spirit and of the faculty of individual action. Therefore this heaviness of sleep is for the most part accompanied with fever.

435. Add to this, that from blood thus dry, hot, feverish, and inept of solution, scarcely any humor is secreted except what is useless, accompanied with the smallest amount of spirit,—a humor whereby are stopped up the interstices between the cortical glands, between the fibres in the cerebral medulla and between the fascicles in the nerves, and whereon no arachnoid fluid is sprinkled. Hence comes lentor and torpidity extending from the principles even to the universal nervous system. This therefore is a secondary cause of carus

which yet acknowledges its first cause as lying in the nature of the blood.

436. From this it is clear that *carus* is not a species of apoplexy; for there is no compression of the cerebrum, either external or internal; that is to say, no clogging or inundation from a superfluity of pituitary humor in the convolutions, the medullary substance, or the ventricles, or between the meninges; neither is there any flaccidity or excessive rigidity of the dura mater; hence there is no taking away of the common animation in the cerebrum. This is noted from the respiration of the lungs. In apoplexy the respiration is exceedingly heavy (with the wings of the nostrils compressed) and struggling; thus it belongs to the cerebellum, alone without the aid of the cerebrum in general. It is otherwise in *carus* where the respiration of the lungs goes on in a natural way and where the cerebrum itself is found to be uninjured.

LETHARGY.

437. Lethargy or LETHARGIA, called by others VETERNUS,* is a species of unnatural sleep of a lighter character than *carus*. Those oppressed with this disease can be roused by divers means, especially by such as excite and stimulate the animus and external senses, and thus restore the blood to its health.

438. From indications it is noted that the cause of this disease is an abundance of serum in the blood, consequently a cold and sluggish nature of the blood and thus its not being easily introducible into the tiny arterioles of the cerebrum; for this is prevented by the copious serosity which must first be expelled. Hence the cause of this disease is obstruction from causes of cold, that is to say, from causes contrary to those obtaining in *carus*. For the cortical substance requires an abundance of dissolved blood, since from this its glands elicit their spirits which they transmit into the fibres and also, in part, between the fibres. Still there remains a general animation, to wit, of the lower part of the cerebrum, the corpora striata, medulla oblongata and medulla spinalis. This is

*A Latin word meaning "old age," and hence "lethargy" or "somnolence" as belonging to old age.

known from the state of the respiration of the lungs; for the easier the respiration the more friendly is the concordance therewith of the general animation of the cerebrum.

439. A secondary cause of lethargy flows from a serum, also unvivified by spirits, secreted between the windings and folds and at the same time between the arachnoid tunic and pia mater. When the lesser folds and the cortical spaces are anointed by this serum, they hardly suffer themselves to be elevated, but become torpid as from a certain cold. Thus neither is lethargy a species of apoplexy, but it approaches rather to the nature of hydrocephalus.

CATAPHORA AND COMA.

440. CATAPHORA and COMA, in Swedish *dvala*, is called also COMA VIGIL and COMA SOMNOLENTUM when the patient is neither asleep nor awake. Sometimes the patients lift up their eyes, sleepily answer things said to them, and then sink back into their rest. There is present a dull thought without any desire or any emotion of the animus.

441. When such coma is a disease it is a species of *carus*; for it arises from a thickened blood which is denied passage through the smallest arterioles, though passage through the larger ones still remains. It arises also from a viscous excretion of the blood,—an excretion sparsely irrigated by the lymph of the arachnoid. Besmeared with this excretion, the folds between the cortical congeries stick, so that they can hardly be elevated except by reason of a cause powerfully stimulating the senses, the animus and the mind, or by reason of some other cause which dilutes the blood and breaks up the slight glutinosity.

442. If it arises from heat or fever of the blood it is called COMA FEBRILE; or it also heralds fever; and is a species of *carus*. But if it arises from cold of the blood it is a species of lethargy.

443. There is also a non-morbid coma vigil, as when, awakened in the early morning, we are still as it were asleep as to the external senses and our mind reflects upon the quiet rest of its members and the delights of sleep. Such a state sometimes appears to be quite delightful; but we become fully roused up as soon as some emotion invades the animus or some

delight the mind. For the smaller complicated folds of the cerebrum, collapsed in sleep, are not yet well separated but lie joined together, though readily separable. And if we may be allowed to speak from interior anatomy the vertex of the cerebrum, which is the first to collapse and the first to be erected, seems to be raised from sleep while its inferior lobes stretched out over the cerebellum still lie as it were in slumber. On this account the respiration of the lungs is then natural and not yet mingled with the voluntary.

444. From these considerations, the cause of somnolence, from overly protracted or long continued sleep becomes evident; likewise the cause of the dulness arising therefrom. For the highly delicate commissures of the cortical clusters coalesce more strictly and in the time of sleep are so coagulated with a fatty juice that they suffer themselves to be separated from each other, and the tiny arterioles leading through these commissures into the cortex, and which have been compressed, suffer themselves to be expanded, only with difficulty. Thus with the distinction of the cortical substances, which are so many little sensories, perishes also the distinction of the internal corporeal life itself.

WAKEFULNESS.

445. WAKEFULNESS or lack of sleep is for the most part a concomitant or herald of fever; it is therefore called FEBRILE WAKEFULNESS. By reason of much wakefulness moreover, the circulations of the spirits, blood and other humors through their fibres, vessels and ducts, in their glands, muscles and viscera, both of the head and of the body, are continually interrupted, and some even cease; nor do they carry on their natural courses. Hence comes cacochymy,* heat and hardness of the blood and thus many threatening ills.

446. The causes of unnatural wakefulness are contrary to the causes of carus and lethargy, being, to wit, those that in-

*Cacochymy or cacochymia, from two Greek words signifying "evil" or "depraved," and "liquid" or "humor," is, in general, a depravation of the humors of the

body. It is defined by Blancart as "An abundance of vitious humors in the blood, namely, a degeneration of the blood, serum or lymph."

hibit the cerebrum from becoming heavy on itself and from collapsing; such as all burning affections of the animus, that is to say, all those sicknesses that maintain the cerebrum in an expanded, light and subdivided condition. For instance, as is obvious to everyone, gladness, anger, anxiety, care. The same effect is also produced by desires of the mind if they are conjoined with cupidities of the animus; add to this unduly fluid blood which flies to become present at the least nods of its mind; and therefore also plethora; moreover, excessive fullness of the bloodvessels and also of the windings and little folds; from which evacuation is denied in the cerebrum as a result of the denial of evacuation in the body, for instance, through the pores of the cuticle, for the sweat and effluvia, also through the bladder, bowels, etc.

447. Cases of WAKEFULNESS and INSOMNIA frequently occur in fevers, because in fevers some clotting of a crude and parched blood sticks to the arterioles. In fever, moreover, the heat, and also the acridity, angularity and inequality in the red blood and in the purer blood, and also in the serum and lymph, in vessels and fibres and also outside the vessels and fibres, perpetually stimulate, rub, influence and excite the animus of the cerebrum; thus there is no peace and rest in the internal sensorium. For these conditions medicine is prepared from such things as mend the blood; also from NARCOTICS, from PAREGORICS which are mild SOPORIFICS, from anodynes, etc.

(To be continued.)

NOTE BY THE TRANSLATOR.

In illustration of the doctrine laid down by Swedenborg in the above chapter as to the nature of sleep, the following case will be of interest. It was originally given by Dr. Pierquin, who included it in a paper published in the *Journal des Progrès*. The case was translated and published in the *London Lancet* (volume II, 1829-30) from which it was reprinted in the *Intellectual Repository* (volume IX, 1848, p. 303) immediately following a translation of *The Fibre*, nos. 421-432. We quote from the *Intellectual Repository*:

"Rose ———, aged 26 years, of a lymphatic temperament, feeble constitution, small stature, with blue eyes and light hair, was a servant in Romans in the Department of Diôme in France, and was admitted an in-patient of the General Hospital at Montpellier in 1821, suffering from caries of the cranium with ulceration of the membrane which lines the inside of the skull, called the *dura mater*, allowing the brain to protrude through the opening like a fungus.

"During quiet sleep the swelling of the brain subsided so much that the organ seemed to repose upon itself, at which time the pulpy swelling of the cerebrum withdrew entirely from the lips of the wound. During dreaming the cerebral swelling protruded. After she woke the protrusion regained its usual size. Often at the dressing hour the patient was not yet awake and it became necessary to arouse her from ordinary, long and sound sleep. The difficulty attending the passage from this cerebral inertia to activity was marked by such a state of orgasm that it became necessary at each dressing to take off a considerable portion of the pulp of the brain; an operation always unattended with pain, and unperceived by the patient who seemed to suffer no inconvenience from it. The patient was often subjected to the following experiment:—Whilst placed on her seat during the dressing we entered into conversation on some topic that might fix her attention. The moment she became engaged, the oscillatory movements of the brain became at once more rapid and stronger; pressure was applied upon the brain as strongly as possible, and in an instant the patient lost the use of all her senses, could no longer form an idea, ceased to speak, terminating the conversation in the middle of a word which she finished when we removed the compression and she then completed the phrase. These experiments were not only unattended with the slightest pain, but were unknown to the patient who never perceived the interruption to her intellectual existence, which was occasional at pleasure.

"The number of pulsations in the evening were 120 in a minute, during sleep 98 or 100; in the dreaming state the number varied according to the agreeable or disagreeable nature of the dreams."

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PHYSIOLOGICAL PAPERS.

BY LILLIAN G. BEEKMAN.

V. THE OFFICE OF SENSATION. (*Concluded.*)

THE SENSORY SUBSTANCE AND ITS PARTS.

The organ of sensation is in the gray matter of the brain; specifically, in the gray matter of the cerebrum. There are two tissues in the human body the cells or units of which have a lease of life as long as the life of the human being. If in any way they are destroyed they are never replaced. This cannot be said of great masses of cells of the body belonging to other provinces and degrees of tissue.

It is computed by CARPENTER that at every round of the circulation of the blood 4,000,000 cells of one type or another disappear like the dying of a generation. But in certain tissues the cells possess a far more lasting tenure of existence.

It can be seen that the cells that have a more lasting tenure of life are the only ones that are educatable; that is, they are the basis or body upon which is stamped from hour to hour and year to year all the growth of what we call the human creature, its skills, its advances in knowledges. And on such long-lived cells only, can the experience and the practice of life, acquired successively through long years, be stored in cumulative result and simultaneous action, power, usability.

Muscular tissue is one that has a relatively long tenure of life. It is, therefore, an educatable tissue. Because it has so long a tenure of life, every least exercise of it distinguishes and empowers it, and makes it grow in the direction and form of that exercise. The muscular tissues of every one become

individuated to the form of his own practice or use. This tissue, however, is not one of the tissues the units of which if destroyed cannot be replaced.

There are two tissues the cells of which are longer lived,—tissues namely, or cells where the cumulative results of the man's long years of life and exercise are stored to be handed down for the heredity of the race, and to condition the man's own everlasting power and life. These two tissues which are the supremely educatable tissues; tissues the units or cells of which exist before birth; which have a tenure as individual cells as long as the living creature exists upon earth; and which, if they are destroyed in any portion, will never be replaced with their like,—these tissues are:—(1) The gray cells of the central nervous system,—what Swedenborg calls the cortical glands and cineritious substance; and (2) the cells of the reproductive ovules, male or female.

It is with the first, the units or cells of the central nervous system, that we are concerned here.* From early months of

*As regards the cells of the female ova, these are present and perceptible in the early months of gestation. Within six months after birth they can all be distinguished from their surrounding sister cells of the ovary. All during the life of that woman they remain as a basis, a foothold, upon which is plastically stamped all the growth, or the character, the faculty, the varying states year by year, of that little individual woman-soul, through childhood, girlhood, womanhood. These cells have a tenure of individual life as long as that of the woman herself. Save,—and here is a wonder and pathos,—when the woman comes into full maturity and power after adolescence. Then one of these ova cells each month gives

itself to be prepared for its full function and use; and the preparation itself brings the cell into trembling feminine weakness and near to death.

In this preparation all the surrounding cells concur. They as it were melt themselves down into exquisite lymph-milk that they may confer upon this cell of the female ova selected at this month, the food by which it may grow large and full, may become as it were a queen cell among the sister cells of the hive.

In that matured cell,—fed by this royal food, grown to full and beautiful size,—there then takes place that peculiar nuclear reaction by which it as it were puts off the male element that has been derived from the father of the woman, and that has hitherto been

gestation until the hands of that human being are folded in the last repose these cells remain the very ground, the subject, the substance, of every growth of knowledge, of love, of thought, of widening comprehension and skill. During that time each one of them retains its personal identity, its continuity; and every new experience of the man is registered into the growing, greatening powers of that system, just as, nay, much more than, every practical effort of the man through his muscular system is registered in the increased adaptability and skill of the muscle.

Moreover, if any of these cells are destroyed they are never replaced. The place which they occupied will be filled in by a free growth of the lower, the sustaining or matrix tissue, in order that, if possible, the general tension of the brain may be the same. But the thinking, feeling, self-determining cells, the very cortical glands of the brain, thus lost will never be reproduced.

The cells of the reproductive ovules are indeed a basis for every change of experience and growth of life. But this is

the ordinating element in the nucleus of that ovum. After that, the ovum, with scarcely a quarter of its previous nucleus left within it and having thus become almost purely, helplessly feminine, now awaits possible fecundation.

Until this last peculiar change takes place,—this extrusion of the major part of its nucleus,—the ovum cannot be fecundated. By this change, this putting off, this loss, it is made capable of serving that last and wonderful use; is prepared by the Lord to act as the mother basis for the formation of a new living creature. But by this same change the ovum cell has come near to death. So long as the change did not take place the cell was secure of personal ex-

istence, if I may so put it, so long as the woman lived. After the change a sacred weakness, as it were, befalls it. If no new nucleus come to it, that is, if no seed come to it, no prolific, to enter in and to replace its nucleus, for ten days at most is that ovum able to remain living and vital. At the end of the period it, as it were, dissolves, is resolved, passes into the limbo of the unfecundate.

But with the exception of such ova as are monthly selected in this way to become full consort cells for a new production, the reproductive cells, *per se*, have a tenure of life as long as the creature; and every change of state and of life of that creature leaves its stamp upon their plastic character.

unconscious to the person; the person is not in any way able consciously to help or to hinder in the specific process. But in the specific process of the action and change of the gray cells of the central nervous system, the individual is able to be aware of the type, of the action, the work that is going on, and to himself govern, seek, avoid, act, either for furtherance of the process or for resistance to it,—and this from hour to hour. Thus the gray cells, the cortical glands of the nervous system, are the educatable tissue, *per se*, and, in major part, their self-exercise is a controlling factor in the result.

Especially is this true of the gray cells of the cerebrum. For in the cerebrum alone is that sensory basis where things, images, ideas, stories, come to sensitive, conscious perception, and can be held or be dismissed.

It will be well to recall the general outline of the nervous system or substance. The gray matter, that is, the cortical glands of the brain, is composed of distinct units or cells. These, Swedenborg says, are as many as the stars in the sky and are in like order and arrangement.* It has been computed by modern authority that there are at least some three thousand million. These cells themselves, *per se*, considered as units of such and such plane, have no continuity one with another. They and their branches touch each with each, but yet each is perfectly distinct. It is as in a great forest. The branches of the trees interlace and the very little twigs are in touch like the fingers of hand interlacing with hand; and yet each tree is perfectly distinct as to all its outgrowth and branches, and perfectly distinct as to every ramification of its root. The interlacing and touching between tree and tree in the forest is one of contiguity not of continuity. It is as if one of a group of friends reached out and touched hands with

*There is a system of fibrils more universal and a full degree higher than the cortical glands, *per se*, and, indeed, existent antecedently to their formation, which nets them about,—and also every cell of the body,—in one universal

network of finest and first embryonic bridges and embracements. But of this no cortical glands nor any corporeal cells, *per se*, know anything, and for it they are not in any way responsible.

others, and the others in turn with still others, in social contact, in social sympathetic touch, and connection and grouping. So is it with these cells. So they talk with each other, communicate, compare; act alone, act in groups, in societies. This is their mutual connection. Not a connection as with the Siamese twins where, in some parts, they are as it were a continuous growth together

Of all this innumerable host of cells, each involving its individual sensitive and motor parts, or its private understanding and will (*D. Wis.* v. 3), no two are capable of the same thing. They belong in general to the same great kingdom, to the same great plane; but only as men of different nationalities, with all their individual peculiarities and genius, belong to the same common race or degree of men. The illustration may carry even further. As no two men are competent to the same use, have the same love or quite the same power; as, practically it takes them all and the sum of their connective and harmonious effort to present in full image what we mean by human power and faculty; so it takes all these gray cells with their sum of individual development and power to present as a whole the image and form of their full mental faculty and plane,—that mediate plane which is indeed the characteristically human.

Certain things as to beginning and growth, and, as we may say, members, are common features of all. In the very early embryonic growth, mother-cells of the external blastodermic membrane bud off, as it were, cells minute,—each with a particle of nucleus,—which stand in relation to the mother-cells as a family of little sons. These cells thus budded off are the individuals, the units of the gray matter,—the cortical glands of the brain. At first they are minute, pear-shaped cellules,—a nucleus with scarcely enough protoplasmic substance to envelope it,—with the pear-shaped elongation running to a little point. As the gray cell passes out of its infancy the pear-shaped prolongation grows downward. This is the infantile beginning of the nerve fibre. Then, from the outside of the cellule, the delicate envelope of pear-shaped protoplasmic substance around the nucleus begins to branch

and grow like a fine mossiness. As the cell grows on to such completion of its form and structure as involves its actual functional use, we may figure it as presenting three main parts or organs:

(a) The nucleus which was there from the beginning.

(b) The nerve fibre, grown to some length,—it may be from a few inches to several feet. At its lower end it has branching ramifications which are like numerous fingers. This nerve fibre is the executive arm of the nerve cell, and the branching ramifications at its end are as it were its multiple hand.

(c) The fine, branching, moss-like, tender, foamy outgrowth of the protoplasmic substance around the nucleus. This has become developed very greatly into what is called the dendritic structure.

All this outgrowth represents a very complex and differentiated development and fixation of the momentary amoebic processes of simple cell creatures. Concerning the cell-fibre itself, if it is the fibre of a voluntary nerve, one thing remains to be noted. Until this cell-fibre, this nerve fibre going out from that particular cell, has its executive arm coated about in a particular manner, the nerve fibre will not transmit nervous impression; that is, it will not transmit nervous action until it is myelinated, or has its insulation-covering of the white matter of Schwann.

Another universal is this: From the circumference of the dendritic processes to the nucleus, and from the nucleus through the nerve fibre to its end, is the direction, the path of all molecular, of all nutritive and of all functional flow. These dendritic processes, these moss-like outgrowths, are the sensitive circumference of the growing cortical cell, or, are its sensitive organs; and the action, or the path in which the sensation travels, is from without in, or, from their periphery to the nucleus lying towards the centre of their outgrowth. But the action of the nucleus itself determines itself downwards, along the fibre.

There is another peculiarity of these dendritic processes. The nutritive stream enters the cell through these dendrites

along the same path, the same general line, that sensations must travel; that is, from the peripheral outgrowths inwards towards the nucleus of the cortical gland. Thus the dendrites stand in peculiar relation to the animal lymph, that is, to the purer blood or the venous return of the animal spirit. As this animal lymph resolves or exudes through the fine arterioles of the red blood system in the brain, it everywhere flows in a current determined towards the centre of the gray cells; and the path by which it passes to that centre is through this dendritic outgrowth as an intermediate.

The gray cells of the brain lie in a fine lymph bath. Their whole tissue is saturated with this lymph, as one might imagine a sponge saturated with the white of egg. Everywhere the store of this animate lymph is being continually replenished by that which resolves from the red blood stream through the capillary; and everywhere it is determining itself in a fine flow through the dendritic or protoplasmic outgrowth of the gray cells, towards the nuclei in their centres. These nuclei are, in fact, as it were little hearts of a nervo-lymph circulation, that is, of the middle blood circulation. And the completion of the round of this nervo-lymph circulation through the gray cells of the central nervous system is the circle of the spiritual-animal life.

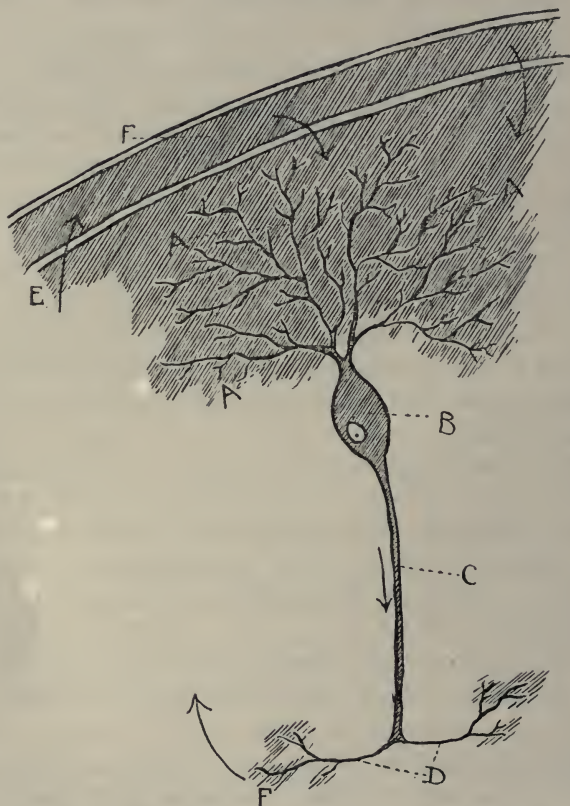
Moreover, the initiation of the complete returning circle of this middle blood, or animal spirit lymph, through the cortical glands of the cerebrum, coincidently with the infant's first effort to breathe, is the cue which opens the scene of the sensitive life and action of the cerebrum, or of man's voluntary and intellectual.

The following is a diagrammatic scheme presenting this relation of the cortical gland to the returning flow of the animal spirit:

F represents an arteriole and its red blood stream in the brain. The shading indicates the purer blood, that is, the animal spirit flowing in a fine lymph serum which it brings back with it from its sojourn in the body and bodily uses.

The two arrows indicate the direction of the flow of this purer blood or animate lymph, which returns to the neighbor-

hood of the brain-cells in the general stream of the red blood. When it reaches an arteriole in the vicinage of the gray cells this returning animal spirit or purer blood everywhere resolves into subtle streams exuding through the walls of the arteriole, and pouring into the intermediate spaces by ways of its own; whence fine streams of it everywhere determine themselves towards the dendrites of the gray cells (A). These streams flowing through the dendritic processes of a cell all converge towards the nuclear heart of that cell or cortical gland (B).



A, B, C, D are the characteristic parts or members of a grown nervous unit.

A represents the dendrites,—mossy branching processes. These are the receiving members for the cell proper (B), the

ways of afflux both for nutrition and for sensation. They are woven of hollow fibres curved in spirals which by a thousand foamy turns weave a pattern of structure, through the meanders of which they finally approach the cell B. Undulation of the ether,—the third aura or atmosphere,—also runs by spirals and therefore can run along these ways as by ways formed to their own native curves.

B is the nuclear cell. Here the constructing spiral fibres at once bend and determine themselves into the finer, less finited vortex form, or the perpetuo-spiral form. This latter form is the form characteristic of all the activities of the second aura (*Soul*, 88). Thus sense-waves travelling in spirals through A, A, A, so soon as they enter B are bended into the perpetuo-spiral or vortical form with its ingyration and egyration; and so much of the wave as cannot be so bended is stopped (*Soul*, 21, 16, 95, 84, 88).

This cell (B) is capable of self-determined expansions, constrictions and stiffenings or tensions,—whether to hold on to the inflowing sense-wave, or to resist its urgency, this being part of the as-of-itself power with which their form and substance is endowed (*Soul*, 357).

The dendrites are the receiving organs of the nuclear cell B, the ways of afflux, both sensory and nutritive. They are the only way by which the cell can take touch of what is going on outside itself, whether in the outside world or in its brother cells. In sleep it is these, in the cerebrum, that are shut up, collapsed.

But this is not all. They are also the lines of afflux for the stream of nutrition; the channels of the incoming returning streams of animal spirit or purer blood. These streams enter the dendrites by the channel of those hollow fibers which weave the dendritic structure. And, thus filled, these fibres are not put into full expansion and tension. As long as such a stream inflows into these channels and runs through them, the whole woven dendritic structure will be erect, expanded, tense; if by any cause it fails to flow through them they will lose all their tension, their delicate sustainment from within, and will fall limp, collapsed, flaccid. In this state distinct sense-percep-

tion and comparison of senses would not be possible, and much less delicate and exalted perception and life. Hence when this occurs in the cells of the cerebrum unconsciousness ensues, or sleep.

The nucleus in B represents the simple cortex, the pure intellectory or structural form of celestial truth proper to the genius of the particular individual gland and its individual potencies of office in the harmony of the whole.

As the stream of the retiring animal spirit resolves from the red blood-stream in the arteriole F,—bringing with it the dust and care and effluvial spheres of its bodily work,—and enters the cell B by way of the dendrites A, A, A, it must pass through or by the touch of the nucleus. And as the stream passes through here, so somewhat of the human formative, human spirituous fluid, celestial good, is sprinkled upon it, added to it, to restore and humanly vivify and revivify (*S. D.* 914).

D is the branching outgrowth which represents the hand, many-fingered, at the end of the arm C, by which B executes its will, commands muscles, stimulates secretions, and talks to other cells, brother cells, communicating to them what it knows, shapes, feels, wherever its fingers (D) come into contiguity with the dendrites of these brother cells.

The gray cells of the cerebellum, medulla oblongata and spinal cord are of sufficient development for this complete circulation of the red blood to take place through them long before birth. But the gray cells of the cortex of the cerebrum stand apart and are under different laws. At birth they are not yet prepared to transmit nervous impression or to receive it so far as concerns the thousand and more millions of their units. They are as yet absolutely embryonic. The sole exception to this are the few million nerve fibres connected directly with external sensory organs, particularly the organs of the general tactile sense and the specific organs of sense,—the gray cells in this connection, and the nerve fibres which convey the impression, being sufficiently developed to transmit nervous impression at the time of birth. But these are the only nerve fibres which are as yet myelinated. The nerve

fibres of all the other millions and millions and millions of cells of the cerebrum are not as yet even grown. This we will take up later with something more of fulness.

It may be interesting to note here that at least one-third of the cells of the cerebrum are not sufficiently grown and completed in their structure, to further develop themselves by self-determining action until adolescence or puberty. And it may be worth while to note, just in passing, that the type of cells of which this is true has no immediate connection with the outside world. Their fibres never reach the brain itself. Their base, their exterior world, if I may put it so, or their objective plane, is in the complex of that mass of cells which themselves are in connection with the outside world and, through exterior sense-organs, have received sense-impulse, and thus, through the experience of life and the changes of education, have as it were already laid up material images and sympathies in life, and formed a corporeal memory of their cumulative sense-experience and predilective imaginations and recollections.

Moreover, only according to the range and habit of that world of sense-experiences, of education, habitual and in-filled in those cells which came into development from birth to the time of puberty, do those groups of cells which come into play afterwards, that is, at the time of adolescence, have materials for a world, an inner world, as a basis for their own sensation and action, their comparison, grouping, classification and series-making. For the specific use and power of these cells, which come thus late to their first effective self-determining action, is to make connections, associations, series, from the various ideas of sense and of education previously laid up; and thus to effect a unification of many impulses, many ideas, into one. It is these cells, which begin their child-life about the time of puberty, that are able to take the touch, the sense from scattered things of memory distributed in a hundred or thousand other cells, and from the consensus of many, to as it were build a unified sense. It is these cells which in the complex of many facts are able to sense one law. For these cells, which reach to and touch other cells of the brain, have so abundant

ramifications of fibre, that they may take, touch and sense and cross-sense from a hundred other cells, and, by their inter-communication, from ten thousand cells. Thus they are able to unify, combine. Thus things scattered in the memory of a thousand other cells, earlier grown and communicating immediately with the outer gateways of eye and ear,—such things, these new cells are able to gather together in themselves in a series and order and form quite other than that they had had in the cells which originally gathered them.

HOW UNDULATORY MOTIONS OF ETHER AND AIR MODIFY THE
EXTERIOR FORM OF GRAY CELLS.

We now return to the fact that the sensory basis of the human organism,—that which performs this office of sensation of which we are treating,—is specifically in the gray cells of the cerebrum.

The action of sensation in a gray cell fairly developed is as follows,—I will give it in a little kindergarten illustration, perhaps the truer in its idea for the very crude simplicity of it: Suppose the gray cell is to receive the sense-idea of a tree. Consider now that from every portion of that tree, standing as an objective verity, the ether waves are reflected. These reflex ether-waves fall upon the sensitive receiving membrane of the eye; and there the undulation, taken up by the nerve, carries them on to the cerebrum, the common sensory. These undulations will go most directly and powerfully to those gray cells to which lead the sensory fibres that are directly concerned in the carrying. But since no undulation can take place in any substance in the cerebrum,—where the whole of the sensory units are afloat, as it were, in a fine sea of animate lymph,—without some vibration of the incoming wave being intercommunicated to the whole, therefore, all the cells of the cerebrum will be affected in a greater or less degree. But the action will be direct, explicit, distinct, only upon those gray cells which are specifically approached by the nerve of the sense-organs.

Consider now that the whole protoplasmic envelope of that gray cell is of exquisitely sensitive substance, and of a pli-

ability, a delicate responsiveness, almost beyond our power of conception. Indeed, so great is the pliability, the softness, the responsiveness to every impression, undulation or impact, that such substances, for their protection, must be enclosed within bony walls and within many fine membranes. To a gray cell of this type, with its whole outer surface constituted of this exquisite, sensitive, pliable, protoplasmic substance, the undulations of the ether sent off by that tree out there on the hillside, come and flow, and touch it about everywhere, so that they press upon it as it were, as the waves of a tide press upon a shore. And as every little ripple of that tide takes hold of an outer part of the cell it acts as it were the part of a liquid hand which compresses the cell, contorts it and, by its exquisite play, momentarily moulds it into the very image and form of the original aspect of that tree; so that one may say, if I may use so child-like an illustration, that the sensation coming in from without by means of the undulations of the ether, momentarily takes that gray cell and moulds its outer form and body into the form and body of the tree. Thus one may say, crudely speaking, that everything that comes in from eye and ear moulds the gray cells of the cerebrum exteriorly into a replica of the shape and form of the exterior object. It is thus that the gray cells sense the form of that thing, because, for a moment, in their exterior pliable substance, they sympathetically *are* that thing as to form and shape; during the moment that the undulation lasts, they put that shape on like a garment or body, and within it live the life that is possible within such form.

Moreover, this would hold not merely with regard to the natural object seen by the eye, but also in regard to all images conveyed by words, all ideas, all series and successions of ideas and notions, all the series of images in a story, in a train of historical truths and even of higher and abstract truths. The gray cells are able to sense the idea, the image, only because exteriorly they are literally, momentarily moulded into the shape thereof, and put that shape on, like a body within which to live. Of course, the illustration is crude. The cells change, they are finally moulded, into what is often a mere artificial

shorthand indication of the thing itself. But this is the way, in its inmost idea, in which they get all sense of the things of the outer world. This is the way in which the objects of the natural world pass over to the sensitive world and are there reproduced, and form and fix a reproduced world in the sensitive and imaginative, a reproduced world able to affect and condition the eternal spiritual.

One thing more should be noted here. I speak of these images coming over by way of the ether,—the third atmosphere,—and affecting the gray cells thus. Now Swedenborg says that the gray cells, in their mass and centre, are specifically disposed, in all their building fibres, to the vortex gyre of the second atmosphere, that is, of the second aura; but that the exterior of the cells is formed according to the spiral gyre of the ether,—as is also the play of the undulations in the sensory nerve; that the line of the fibres which form the exterior of the gray cell, as it winds inward, takes on, not the simple spiral alone, but the spiral vortical form which is that of the second aura (*Soul*, 16, 21, 84, 88, 95); and as the centre of the gray gland is ever more exquisitely pliable than its exterior, it accommodates itself to and exquisitely feels every motion and contortion produced in its exterior. For it is in this interior,—this nucleus of the gray cell, woven to the form of the second aura,—that the power of self-determining action resides, that the voluntary or self-determinative tensions, stresses and strains are initiated; and its potency for these is capable of great development. If I may use a rough, bold illustration of the power which this disposition of the exterior of the sensitive gray cells has upon their perceptive, sensitive, emotive interior, I will take certain gross phenomena of hypnotism.

When a subject is brought into an hypnotic state,—that is, a state in which for a time exteriors and interiors act as one without reflection,—if the subject be disposed exteriorly into the gestures or grimaces of certain acts, certain emotions, the result is very astonishing. The interior influx of the very will and emotive life seems to fall into and be constantly accommodated to the predicates of that exterior disposition and to

make them, as it were, one instrumental cause. For instance, if the fist is doubled and the arm extended as in a blow, the blow will be apt to instantly follow. If the brow is pulled together as in an angry frown the whole man comes into a rage. If the face be plastically pulled into an expression of bitter grief or weeping the whole man seems to put on that exterior disposition of the body,—to live emotionally within it,—and the subject grieves or weeps. If the lips be disposed to smiling contours of contentment the whole emotional man puts on as it were that happy and contented exterior shape as a garment or body, and, according to all its influx, disposes itself to that change of form. If it be shaped to hilarious laughter, Homeric are the shouts with which the man seems to greet some humorous incident.

Carry this idea over into the idea of the office of sensation. Conceive that the gray cells as they are exteriorly shaped by that which acts upon the sense-organ from outside,—whether by the actual images of outside things or by the succession of stories told, or by anything that affects them,—sympathetically take on for the moment, and as to their exteriors that particular shape. Then, as the exteriors are disposed so the interiors accommodate themselves and yield, almost as water yields to the changing form of a vessel. If this were not so those interiors would never be able to take from the incoming wave a sympathetic sense of the objective natural world.

One thing more,—and this of great importance. After the cell has been acted upon in any instance, then, as soon as the ripple and undulation passes by, the gray cell recovers its form. But for a little space there is still in the exterior of that cell an easy aptitude toward that particular form; even as when a piece of metal is bent, or a piece of paper; for a few moments afterwards it is very easy to again bend that metal or that paper along the same line and crease. So with the gray cell in respect to a sense-impression just made upon it. But if the action of the impress be not repeated, then, after a time, by the spontaneous effort of the cell the effect of its first happening almost entirely passes away.

Now this is the great power of the gray cell, its potency, its

wonder. When once it has experienced such a change, such a sense-impression, it can, if it will, and more particularly if it makes the effort almost immediately afterwards, again pull itself into the same shape. What has once been done to it it can repeat, can itself do. Thus by its own self-determining effort from within, it can cause to recur in its exterior form whatever has once occurred by outside agency. It can thus live over again, dwell upon, dwell in, any past experience to which it inclines. If an image of the tree has come over and been stamped upon it, then, with the eyes shut and at night, that gray cell is capable of pulling itself together again into the like image, and thus as it were of living over again or recollecting that sense-image, of seeing again that tree.

Moreover, in the case of sense-images of the outer world,—images transferred by speech, images of lovely things or of evil things,—if, in the silence of its own inner chamber, the gray cell have practiced itself in the reproduction of these images because it loved to be shaped that way, then, as the currents of nutriment enter in, the whole determining tide of the animate lymph flowing through the dendrites must flow along the lines of that exterior shape and form,—of that reproduced image. When this is long done, or often done, the flowing current of the returning animal spirit or purer blood will lay down its nutrient particles precisely along these lines, until, after a time, that gray cell will experience that form, that memory-image, not merely by momentary undulations and pulsations of form, but as of something organically built in and rendered permanent,—part of its world and power forever; so that, by the types of the images which most often recur in the mind, we can tell to some extent what we have dwelt upon and appropriated during the period of the gray cells' growth. It is a little as, down on the New Jersey coast, one may tell by the grown cedar trees,—their slant, the direction in which they bend,—from what quarter the prevailing winds have come during the life of their growth. Far more true is this in regard to the gray cells of the brain. The cells of the cerebrum, so miniature, so infantile at birth, will have grown to a bulk ten thousand times greater before the creature reaches adult

life. And during all this period of growth, that which chiefly determines its direction, its trend, is the self-determining action of the gray cell itself in its own inmost chamber, recollecting, acting over again, the dispositions that first affected it through sense-impression alone and momentarily.

One may say that the whole world of experience, good and bad, may come in and momentarily dispose the gray cells as to their own exterior forms. But a momentary affection from without, or even a number of such affections, will not make that form as it were fixed, permanent, organic. It becomes fixed, permanent, organic according to the cell's own reproduction of that form, according as it acts it over again, dwells upon it again, puts itself in the shape of its own pleasures in falling into such a form. As surely as it does this, then that object, that idea which at first came in just as a passing visitor, has become its house-mate, fixed indeed, like a mountain,—unless our Lord move it for the man.

It is thus that the man, by his own election, the election of spontaneous repetition, builds up as it were his own world in this plane of the gray cells of the cerebrum, the plane of the mediate mind where reside will and understanding. From the endless things, good and evil, that have come in from without he electively appropriates to himself by the recollection, what shall be the interior world of imagery; and within this world he will sensitively act and react forever.

It is for this reason that we are told in the Scriptures "Whatsoever things are lovely, whatsoever things are of good report" on these things we are to think (*Phillip.* iv, 8). For according to what we elect to think upon, to hold in mind, according to the type and form of the images which we elect to reproduce in this sensitive imaging plane, such are the very organisms of that growing plane,—as if they grew with such a body and shape. And if this formation is done in ugly unharmonious shapes, not easily will the bad organic work be undone. Consider! If in your early childhood-practice of music you have imbued some ugly habit, is it easily undone when better instruction comes? A literal and organic pulling down and rebuilding must go on; a reformation of organic

tissue; and this is far slower in effective results than was the first building. This is why the reformation cannot take place in a moment; nor the reformation of the voluntary and intellectual,—that organic structure, inbuilt, infilled, which literally is to be undone particle by particle, least by least. But this has also its lovely side, its mount of blessing as well as of fear, a mount from which, on the enunciation of the law, soft thunders are heard. It is indeed true that if the form has been shaped among inharmonies and to inharmonies, the form, the very mind, may feel the sound of inharmonious clashings as delightful and as needed nerve-stimulus, while the exquisite harmony of master symphonies would be to it a weariness, or even a torture. For when a sensitive nerve-substance is once laid in a certain curve only those undulations and modifications which come with like curve, and which stroke it along the way in which its fibres are bent,—only these can affect it and stimulate it to the delight of its life. If the undulations and modifications that come in are of markedly different curve, that sensitive substance would feel them as a subtle inner anguish and tearing. Thus it is that gray cells formed to inharmonies might feel the coming of harmonies as the cicatrical tissue of the body would feel the force and pressure of the surgeon's hand trying to twist it into normal shape. At the same time, however,—and here is the blessing-side of the law,—if it were formed to harmonies then it would, of its own self, apprehend all disharmonies, instantly recognizing them to be such by the undelight which they afford; and the harmonies, the truths, the goods, would be felt in its structure as the very organic quiver of delight.

One thing more we will add here,—a matter of practical import. Whatever the external form or shape of the idea in the man's mind, whatever the quality of image formed there, according to that quality will be the quality of spirits present with him, and this altogether apart from the quality of the man in his own self. If there be hideous, ugly, brutal images shaped in his mind or imagination, whether by speech, hearing or sight, there will be at once present a sphere of those spirits whose delight would be in the actual thing itself of which his

thought or imagination momentarily shapes the image. The instance given by Swedenborg is the following:

When he was reading in the Word passages which in their exterior statement dwelt upon the brutal, the terrible things of Jewish wars, there was instantly with him a sphere of the spirits whose literal delight would be to execute such brutal, hideous, frightful things,—the sphere of men who on earth did literally delight, in their own selves, in such like cruelties. And as soon as they were present with Swedenborg,—merely in the exterior mental apprehension of those sense-images,—they tried to infuse their delights and their heats; and they tried to as it were magnify that image of evil and dreadful things and make it of wider scope and import, and to so fix Swedenborg's attention upon it that it should fill all his mind (*S. D.* 189.)

This law holds true altogether apart from the quality of the man in his own self, or his motive or need in dwelling upon such images.

This gives us a clue to the fact that at no time, while in a promiscuous assembly, can we dwell upon images of unlovely type, even for the best of purposes, without feeling as it were a distress and a perverse sphere,—something feverish coming in, something almost like the mingling and profanation of spheres. And it certainly gives new facts, new sanction, to the statement in the Scripture that, for our sanity and life we are to think upon, dwell upon, image "whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report" (*Phillip.* iv, 8).

And specifically does this concern women as a law of their daily life. For in the organic forms of the mind of women, one may say in their build, the bloods swiftly run into any image which takes hold of the imaginative plane. They are so all of a piece that they cannot even imagine a series of painful situations, that they do not at once feel themselves in some way involved in them,—do not put on as a body of emotion the image presented to the imagination. Where a group of women are together and one relates an unpleasant

fact or surmise, and the image of that thing is formed in the minds of the others,—for it will be formed if they understand the meaning of the words used; and if then the conversation is continued along those lines even for a few moments, every woman present will feel the urgency of a certain subtle and evil sphere, a certain evil and heated sphere which compels her to think along those ugly lines, or as it were, to sickly and mildew the loveliest subject with an unlovely sphere, an unlovely cast of thought. If she be a good woman she feels it with a certain resistance, and yet she is hardly able, save by very decisive effort, to keep entirely free from the current and general sphere which can take possession of a whole room-full.

This, too, is the ground of the hideous mob action.

OFFICE OF THE CEREBRAL CORTEX, MAN'S SENSORY, TO THE MAN
HIMSELF AND TO THE INHABITANTS OF THE SPIRITUAL
KINGDOM.

We come now to the office performed to the inhabitants of the other world by images of the senses, the imaginative of the memory, as those images exist in the brains of men on earth in the variations of the exteriors of the gray glands or nervous units of the cerebrum. By means of these images reproduced by his own gray cells in their self-determinate action, man can rule spirits, satans; can elect the quality of his spiritual company; can invite, can repel. For whatever be the image held in the gray cells of the cerebral cortex, the topic of that image is that of which the spirits around him think and speak. Thus they are as it were bound within the general idea involved in the given image of this plane of the brain with men upon earth; and as the image is varied so also is varied the general idea within which the spirits must think and speak.

Moreover, it is by this plane of man that the Lord instructs and perfects spirits and angelic spirits, that is, angels of the second heaven.

And, further, it is by this plane of man,—the natural memory, inner sensory and imaginative,—as a last or ultimate,

that the Lord instructs and perfects spirits and angelic spirits, or angels of the spiritual heaven. With the man who is in faith, the Lord has the guidance of this plane immediately; with all others he guides it through angels.

SPIRITS ARE INFORMED BY THE LORD BY THE MEDIUM OF MAN.

That spirits are informed by the Lord by the medium of man, and in this way receive knowledges, has been made quite manifest to me, as is testified by an almost continuous experience of two and three-quarter years.

That they are likewise informed by means of other men, although they are ignorant of this, can be clear to me from many circumstances that happened to me before I spoke with spirits; and if I should reflect upon the several circumstances at the time, I would be fully confirmed in these matters and could confirm all men by experience alone. . . .

As regards the spirits,—among the causes that they are informed by means of man is that they put on the whole man, and put on all things of his memory [*i. e.*, the images of his imagination and memory-plane]; thus they are instantly in the faculty of learning,—differently from man, who must be instructed from infancy (*S. D.* 821-823).

Thus the spirits with a man are like the man,—learned in a learned man, dull in a dull man (*ib.* 120).

A spirit was shown that he could speak of no other object than such as was presented to him by means of its presence as a sense- or memory-image in the brain of a man living upon earth:

It was shown to a spirit that he could not speak other than according to the object which may be presented to him by means of my thought. A certain evil spirit who was speaking quite readily without any hindrance, said that he was speaking from himself; I, therefore, merely fixed my gaze upon a fly, and then he could do no other than speak about a fly according to my gaze. . . . Hence he was instructed that he was not speaking from himself, and thus that he could not desist from speaking (*S. D.* 3332).

It is given to man to rule evil spirits, not to be ruled by them (*ib.* 47).

Spirits take it indignantly that they are ruled by man (*ib.* 58).

To spirits who were with me and who did not know that I could speak with spirits it was pleasing [to think] that spirits ruled man, and that they were the man; but displeasing [to think] that the man answered, that he explored their genius, and that he ruled them (*ib.* 68).

The anger that comes to evil spirits when the truth is demonstrated to them, arises from the resulting sense of their own helplessness and of their dependence upon men, who,—as demonstrated to the spirit who was compelled by Swedenborg to think of a fly,—are evidently able to rule them by a steady fixity of intention in the sensory plane of their brain. For spirits wish always to regard men as their slaves, and indeed to make men believe that they are their slaves. The attempt to rule the man with whom they are and to make him their slave is their very joy. But the Lord keeps them in the hallucination that the men with whom they are associated are themselves, and, therefore, they do them no harm; otherwise they would attempt to kill them (*S. D.* 2924).

It thus appears that we have the power to dictate the subjects of thought and conversation to our unseen neighbors,—those who have personally laid aside and lost the ultimate brain-planes of their minds. The things on which we steadily fix inner attention, the things which we, in our cerebral gray matter, recall, reproduce, hold on to as it were, resisting change of image,—these are the things on which the unseen neighbors associated with us must think, and of which they must speak.* Any of such spirits as do not love the image or form so reproduced can leave; and if any image held attentively by the cells of the cerebrum be counter to their genius and their old formed habit of life during their abode on earth,—for all the actuality, the habit, of this natural life conditions fixed habits to eternity, (*S. D.* 3708-9),—they are at liberty to leave, and indeed they then greatly desire to separate themselves (*S. D.* 59; see also 2969-2971).

This concerns the spiritual kingdom; but in the province of another great organic office,—that which is under the government of the celestial,—the same general law holds true. This latter office is, of course, that of the nutritions of the bloods. When man eats his food, the associate genii or angels eat

*This applies only to the neighbors of the kingdom of the satans and the spirits and angels of the spiritual heaven. The celestial

heaven has its ultimate base elsewhere, and not in the sensory plane.

theirs also; that is, "when man feeds on food they are in the idea of good and truth" (or are stimulated thereto), and what is marvellous, their ideas, their inner thoughts of good and truth "differ with every difference in the species of food" taken by the man with whom they are in association (*A. C.* 5915). Connect with this the fact that ideas are given to animals in this same way, or in a like way; that is, that the ideas from which their instinct acts, ideas that involve rational-seeming ends, are given to them not by sense-images and imaginations alone but chiefly according to the food substances in their blood and purer blood; and they are varied according to the species of food (*1E. A. K.* 90; *S. D.* 167,—quoted above, *p.* 33).

This fact,—that the Lord informs and rules the speech and thought of spirits and spiritual angels through the medium of the brain of man, and indeed through and according to the images formed and reproduced in that brain as memory and imagination,—falls as a simple instance under the well known law that the Lord governs intermediates not by primes alone but by primes and ultimates together. Spirits are intermediates and are governed by the Lord through that great ultimate of the sensorium of the cerebrum which is more ultimate than they. Hence indeed it is to be seen, that without man, without the brain of man and the sensory plane thereof, order is not perfect; the order of the heavens, so far as the heavens consist of spirits and angels, is not perfect.

Man is the ultimate of heaven and is that into which heaven ceases. His sensual which stands out in the world is the ultimate itself, and, therefore, also the foundation upon which heaven quiesces as a house on its foundation. The sensual man is relatively fixed. The nature of this fixity can be known from the fact that all things which are on earth are also in the heavens, but there they are not fixed, though appearing as fixed. Hence it is clear that when man lives in the world he acquires for himself a fixed plane, and that this, therefore, cannot be changed (*S. D.* 5552).

In man's sensual his proprium resides (*ib.* 5464).

I spoke with spirits to the effect that men are vessels. The vessels are in man's memory (*i. e.*, in the sensitive, imaginative, recollection plane). Because their ideas are terminated in these vessels they cannot

speaking otherwise than according to the vessels, which vessels are directed by good spirits, these by angels, and all by the Lord; also immediately by the Lord. Wherefore spirits cannot speak otherwise than according to the direction of the vessels, for thither they determine their ideas and there they terminate (*ib.* 3759).

As the vessels of the memory are directed the spirit who speaks can speak no otherwise. This was also experienced by means of spirits,—that they would imperceptibly or swiftly dispose the vessels of the memory, and then the spirits could speak no otherwise. Hence it is evident that it is the continual disposition of the vessels of man's corporeal memory; for as the vessels are disposed so do the spirits speak, and so and no otherwise can the spirits who are nearest think. For the vessels of the man are the planes in which ideas are determined. If these vessels are not adapted they cannot receive; the ideas of proximate spirits are as it were bound to them. With those who are in faith the vessels of the memory are disposed by the Lord by means of angels in a general way (*ib.* 4042-3).

This is the plane of that intermediate mind, incomplete at birth, which has the potencies not only of self-sensitiveness, but of attention, of self-compulsion, of acquirement of skill by repetition, and of freedom.

The pure intellect whose gift it is to know universal nature and, from itself, to have intuition and knowledge of all her arcana, cannot be instructed by the internal senses and still less by the external. Itself has formed all the senses, both internal and external, according to the pattern of its own nature, and has furnished them with receptive organs before their use. Consequently, being prior to the senses, it can never be acquired, cultivated, perfected, but ever remains the same from the first stem of life to the last. Hence it is as perfect in the embryo and infant as in the adult and old man; in Davus as in Oedipus; in an insane and stupid person as in an eminent philosopher. The intellect that is instructed and perfected is next below that pure intellect. It is called Human Reason and also the Rational Mind, and its operation is Thought (*Soul*, 134).

The intellect consists of mere intellectual ideas which are formed first from material ideas; for thought is nothing but a rolling and turning of such ideas which, when collected into a certain form, result in a judgment or conclusion wherein such ideas are present simultaneously as are present in the thought successively. Ideas of memory, imagination and thought are nothing but changes of the state of the internal sensory, and such changes are possible in infinite number. The faculty of changing its states is the very faculty of producing ideas.

Liberty, therefore, consists in producing changes of state in the sen-

sory and consequently in the intellectory; or, in putting on states which are suitable to this or that end. For we can turn our thoughts into whatsoever side we will, and into that universal state in which we fixedly hold our mind no other ideas can flow than such as pertain thereto. Thus as is the state of the mind such are the ideas that inflow, and such the form thence born, and such the affection of that form, or the love (*Soul*, 357-8. See also 356, 470, 372 iv, 472, 375).

All this is of the senses of sight and hearing. The introduction or first production of images on the surface of the gray cells is by the action of the sensory nerve; and the after-production of such images is by the intrinsic potency, endeavor, will, skill and effort of the gray cells themselves. This ground of the inner sensory is the ground of the senses of sight and hearing, of the imagination; and that common sensorium where all sense-images coming from the world are introduced and reproduced, acts as the ultimate of the inhabitants of the spiritual kingdom as distinguished from those of the Lord's celestial kingdom.

In the Lord's body there are two, as it were, kingdoms, as in the human body; one pertains to the heart and the other to the lungs. That which pertains to the heart is called the celestial; that which pertains to the lungs is called the spiritual. These two kingdoms are wonderfully united, and one and the other reigns in each several province, but distinctly (*S. D.* 499).

That the images stored in the memory are the ultimates in which spirits and spiritual angels rest, see *S. D.* 903-5.

Objects of sight and hearing from the outside world by means of undulations of ether and air dispose or mould into new forms the external vessels of thought, that is, dispose or mould the external portion of the cortical gland. Now according to the form and nature of that exterior disposition such is the reception of influx in the glands. For the great law is that reception is according to form. Thus when the form is in any respect varied the reception varies. The understanding of angels and men is thus reciprocal.

"Merely from a series of natural things rightly connected in our ideas angels are able to understand a series of sublime and celestial things." Thus it is that "the earthly paradise passes over into the heavenly paradise" as well as the reverse (*S. D.* 155).

Of the power of the Lord to inform and rule spirits and spiritual angels through the images introduced and reproduced in the memory-plane of the brain of man; and that spirits and angels are obliged, as it were, to put on those images or those words—for words also are images—as a sort of garment or body, and to think and live and feel and speak within them, see the instance given in the SPIRITUAL DIARY, n. 1735: “If barely one word is uttered, for all words are ideas, then that word can as it were be put on (by a spirit or a spiritual angel); thus he can act inwardly within that word.” It is thus that the bond of common ideas is given to them, and indeed to societies of them at one time.

An individual instance is given. “A certain angel (angelic spirit) on hearing the word *Servant* (probably in the sense- or memory-plane of the man with whom he was associated) clothed himself with that word, and so prayed from it,—signifying by such representation that he is a servant and prays as a servant (the Lord’s servant) for the sake of testifying humility. But (adds Swedenborg) that such a thing can exist is perceivable by no one save those who are in a spiritual idea” (*S. D.* 1735).

The reverse of this can easily be understood or imagined. When the angelic spirit put on the word *Servant*, all his thought therein was of the gracious ministry of one to another, of those who were children under one Father,—God; and above all of the joy of being a recipient of life only, and of receiving life and being the organ and servant of the Most High. Conceive that an evil spirit should put on the same word as the body or “predicate” within which to live. Otherwise would the gyre of his thoughts run. With the sense of the word *Servant* as a body stamped upon himself, would be roused all thoughts of the menialness of service, and of resistance and hatred, of scorn if he thought of another as a servant, of rage and envy if he thought of himself as such. Inmosty within that would be also a hatred indeed toward the Lord; for the very idea of being as it were a servant, an organ of life, and obedient to the Lord’s will is, to those who have fixed themselves in selfish thought and feeling, an inner enkindlement of rage like a little hell burning within.

Consider too the word Love. Spirits of heaven and spirits of hell might put on as a body the same word or ultimate, but how different would be the interior gyre of thought and feeling in the case of the angelic one thinking of the conjugal and of the marriage of love and wisdom descending from our Lord; and of the other thinking only of the grosser and evil things which are as a very union of evil and falsity in selfishness.

Another notable thing is given in the SPIRITUAL DIARY. It is said that whatever the topic which occupies attention, thought or speech among men, the spirits, or devils, or angels, who would delight in that topic as an actuality are present and mingle in the sphere of the man speaking or thinking; and this quite apart from the character of the man himself. For instance, Swedenborg says (as already noted) that when he read certain terrible portions of the Old Testament dealing with things bitter and cruel in war, those evil spirits who had a delight in the actual commission of such things, and who incited men thereto, were immediately present in the sphere of Swedenborg, and endeavored as it were to magnify the passage, to make it worse than it was, and to infuse their own heats therein (*S. D.* 189).

Moreover, Swedenborg learned by experience that when the interior spiritual and celestial sense is evolved from ultimates in the word of such pitiable nature, then, although all clear perception of the images of those ultimates has perished before that inner sense is evolved in the heavens, yet the state of the angels,—that affection which accompanies the idea, their inner sensation as it were,—is distinctly different from that state which accompanies the perception of the inner meaning of things in the word whose ultimate form is in itself gracious and orderly (*S. D.* 1995; *A. C.* 5981).

THE GREAT INSTANCE AND GREAT CONFIRMATION OF THE FACT THAT THE LORD INFORMS AND RULES THE THOUGHT AND SPEECH OF SPIRITS AND SPIRITUAL ANGELS THROUGH THE BRAIN OF MAN AND THE IMAGES, MEMORY AND IMAGINATION, FORMED AND REPRODUCED IN THAT BRAIN, LIES IN THE IMMENSE FACT THAT WHEN THE WORD IS READ BY MEN ON EARTH

AND THE SENSORY GLANDS OF MAN'S BRAIN ARE ACCOMMODATED TO THE SERIES OF IDEAS THEREIN, AN IMMENSE EFFECT IS PRODUCED UPON ALL THE SPIRITUAL KINGDOM OF THE HEAVENS. THE WORD "IN ULTIMATES" REACTS UPON THE HEAVENS.

Angels receive wisdom when the Word is read by man and according to the portion thereof that is read.

All the wisdom of the angels is given by means of the Word, because in its interior and inmost is Divine Wisdom which is communicated to the angels by means of the Word when this is read by men, and when there is thought from it (*S. D.* 5187).

By this means,

First, The angels in heaven are perfected, and

Second, They perceive their blessedness and happiness of life, or receive their sensitive experiences, and

Third, By this means the Word read on this earth passes to heaven, and thus also the truths of faith are communicated to angels of other earths.

The Lord willed to be born on this earth where Divine Truths are handed down by writings, and this from earliest times, because in this way the truths of faith could be multiplied and conserved; while with other peoples they are only learned from parents and thus retained in the memory and then frequently perish in course of time. But not so on this earth. Thus also the angels of heaven not only can be perfected from the Word, but from it they can also perceive the blessedness and happiness of life. For the Word when read on this earth passes over by means of correspondences even into heaven; thus also the truths of faith can be communicated to angels of other earths. This is the reason why the Lord willed to be born here (*S. D.* 4663^o).

Angels and spirits cannot have their life of affection and thought apart from or without man any more than men can without them.

Man cannot live one minute except he be in the midst of spirits as to thoughts and affections; nor can a spirit or angel live for one moment unless they be with men. The reason is because there is a perpetual conjunction from firsts to lasts, thus from the Lord to man; and, from creation, conjunction is effected by means of correspondences (*De Verbo* 3½).

All this because the natural thought of man is a more ultimate plane. Into that plane all things of the angels fall. The state of the fulness, or of the scant existence, in that natural plane, of natural thought, conditions and qualifies the fulness of the vision and love of the angels. Such as are the ultimates so are the primaries. Angels are themselves in clearness of wisdom greater or less according as the ultimate of the brain cortex of the man into which their thoughts fall, is formed to many and to fuller truths, or to less. In other words their own fulness of the reception of life inflowing from the Lord, and the power of their efflux,—which falls into the brain as an influx—will be more received or less received according as that memory-plane, that brain, is fully and flexibly informed. For according to the form of the brain-cells in man, are their reception of and their reciprocity to, the influx both of heavenly idea, and of the supreme internal or soul. According to the scope of the powers of the reception of influx in the ultimate plane of man, such will be the free influx or outflow of the heavenly activities. For the law is just as true for them as for us on earth; namely, that as the efflux is so is the reception of influx; and their own reception of the influx of fulness of life from the Lord will be felt as abundant, or will be as it were straighter in reception, according as the memory-planes of the man with whom they are associated are formed abundantly and are in genial state, or are straightened both as to growth and as to life.

HOW ANGELS HAVE THEIR WISDOM FROM THE WORD.

I have been instructed from heaven that angels are in wisdom from the Word but that they do not at all attend to the things which are in the letter, nor to such things as are in the thought of the man when he reads, but to the interiors of the Word. . . .

The natural thought of man is the plane into which all things of angelic wisdom cease; it is the foundation as of a house. Into this plane flow all things which angels think. Hence, as is the plane such is their wisdom; or, as are the lasts such are the firsts.

If those who read the Word, that is, think or preach from the Lord, are wise men the angels know it not; but still the vision of their thought falls into such things as into their own plane, . . . and they know not at all that this is the case.

The angels said to me that sometimes they are in great wisdom, sometimes in less, sometimes in clearness, sometimes in obscurity; and that their thoughts are variously directed to quarters, now in one direction now in another; and that according to the direction so do they think more clearly or more obscurely. But they are not turned to themselves but to men, and hence they know they are turned to the human race where are the things towards which they are determined. They said they have this from such experience, and when [they are turned] to the things which were in my thought from the heavenly doctrine then they were in clearer light than otherwise (*S. D.* 5607 5610).

It was also observed from experience that as things last are directed by the Lord from things prior, so also, on the other hand, things prior are directed from lasts; and the Lord is the First and the Last, or is in the First and in the Last; so that thus all things of heaven might be directed. (*S. D.* 5615; *D. P.* 220; *D. Love* xx fin.; *Canons*, God, viii, 12 and note).

The thought of angels and spirits circumgyres like the convolutions of the human cerebrum (*S. D.* 2728; *A. C.* 4041).

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ANNOUNCEMENT.

We call attention to the announcement of the forthcoming annual meeting of the SWEDENBORG SCIENTIFIC ASSOCIATION, which appears on the last cover page of this issue.

PHYSIOLOGICAL PAPERS.

BY LILLIAN G. BEEKMAN.

VI. THE CUTANEOUS ENVELOPE OF THE SPIRIT OF MAN.

Man's spirit or mind cannot exist as a lasting, stable, permanent individual force in the other world, unless it possess a plane which is, in the character of its substance and structure, lasting, defined, stable.

The permanence and fixity of this plane everlastingly, are necessarily due to the fact that it has been infilled with finest matters from the earths. For this is the only ground given for the permanence and fixity of any form, whether in the other world or in this.

See the Relation concerning Sir Hans Sloane and the bird formed by spiritual substances only. This bird suddenly vanished or ceased; if, however, the least constituent organic units of that bird had been infilled with fine correspondential matters from the earth, it would have become a fixed and lasting bird (*D. L. W.* 344).

THE ONLY MODE BY WHICH A HUMAN SPIRIT OR MIND CAN
ACQUIRE THE NECESSARY SORT OF PLANE IS BY BIRTH IN A
CORPOREAL RED-BLOOD BODY ON AN EARTH.

The spirit or mind of man can become a form possessing stability and permanence, only if first formed upon the earth

in a corporeal body by means of which it can take to itself a medium between the spiritual and the natural; that is, an organic plane in whose structure, substances of the spiritual, and substances finest material,—or from the inmosts of nature,—are conjoined.

All creation is effected in ultimates, and all Divine operation pervades to ultimates and there creates and operates. . . .

He who knows the nature of substances in the spiritual world and their nature in respect to matters in the natural world, can easily see that no procreation of any minds is possible except in and from those who inhabit an ultimate work of creation.

Substances in the spiritual world appear as if they were material but still they are not; and because they are not material therefore they are not constant. They are correspondences of the affection of the angels and are permanent with the affections or angels, and with them disappear. It would be similar with angels if they had been created there. . . . But in the natural world are matters by which and from which procreations and afterwards formations can be effected, thus multiplications of men and hence of angels.

That spirits and angels derive from this that they can subsist and live to eternity is because an angel and spirit, from the fact that he is first born a man in the world, takes with him that he subsists; for he takes with him from the inmost things of nature a medium between the spiritual and the natural, whereby he is finited so as to be subsistent and permanent. . . .

That there is such a medium the angels know, but because it is from the inmost things of nature and the words of languages are from its ultimates it cannot be described except by things abstract (*D. Wis.* viii, 2-5).

All spirits and angels were first born men. Hence they have extremes and ultimates, which in themselves are fixed and set; within which and from which interiors can be held together in connection. Man first puts on the grosser things of nature; his body is from these; but by death he puts these off and retains the purer things of nature, which are proximate to things spiritual, and these are then his containants (*D. P.* 220).

When man lives in the world he acquires to himself a fixed plane, and this therefore cannot be changed. Hence it is that man remains to eternity such as he has become in the world. He has this plane with him (*S. D.* 5552).

The natural mind consists of spiritual substances and at the same time of natural substances. . . . Its natural substances make the

cutaneous envelope of the spiritual body in which are spirits and angels. By such a covering which is drawn from the natural world their spiritual bodies subsist; for the natural is the ultimate containant. Hence it is that there is no spirit and angel who was not born a man (*D. L. W.* 257, *H. H.* 501).

Man's mind is his spirit. . . .

Hence it can be seen that man's mind is the man himself. For the first web of the human form, that is, the very human form itself, is from first principles continued from the brain through the nerves. This form it is into which man comes after death, who is then called a spirit and angel, and who is in all perfection a man, but spiritual. The material form which is added and superinduced in the world . . . is added and superinduced in order (1) that man may be able to perform uses in the natural world; and also (2) that he may draw with him from the purer substances of the world some fixed containant of spiritual things, and may thus continue and perpetuate life (*D. L. W.* 387, 388).

This infilling is always effected by the blood and by the blood only, in the order of its resolving, transcending, circulation, as that order is given in the *ECONOMY* and in the *SPIRITUAL DIARY*.

That it is done by the blood, note the following explicit teaching:

It is to be observed that the very forms of man's members, organs and viscera are, as to their very contexture, from fibres arising out of their first principles in the brains,—these becoming fixed by means of substances and matters such as are on the earth, and, from the earth, in air and in ether. This is effected by means of the blood (*D. L. W.* 370).

Moreover, since the blood itself is different in every man according to the man's own quality; and since the vital selection of the blood keeps the substances it carries in correspondence with that quality, it is evident that the purer, finer, subtler substances or particles "of the world" which the lower planes of the spirit or mind of man draw to themselves to thereby infill and substantiate themselves as fixed containants and permanent forms, must differ as greatly in quality as the differing quality of the blood and the substances which it carries.

The blood in the lungs purifies and nourishes itself correspondingly to the affections of the animus. . . . Men in the world impregnate their blood with things according to correspondences with the affections of their love (*D. L. W.* 420).

In everyone the blood of the heart is dephlegmated in the lungs and is nourished by volatile elements and odors from the air, and yet in a wholly different way in the good and in the evil (*D. Wis.* x, 6).

Thus whatever takes place in the mind takes place in the inmost of the blood (*A. K.* 71).

The blood attracts into it substances corresponding to the passions of the animus, and "by the quality of the chyle which flows into the vessels the animus is not only fed but encouraged" (*ibid.* 156, 157 note 1).

Whatever favors and corresponds to the ruling principle of the animus, will be carried into the blood (*A. K.* 405 note b).

The blood assumes the state of the life, and undergoes perpetual purification and regeneration (*ib.* 215 note u).

Every globule of the blood has both a soul and a body (*ib.* 162).

The blood is compounded of two natures; one spiritual whereby it acts, . . . and serves and communicates with the soul; the other material. . . . In proportion as the serum is pure and simple, it is near and akin to the blood (*ib.* 256).

The human blood in inmosts is spiritual and in outmosts is corporeal; wherefore they who are spiritual nourish it from such things in nature as correspond to things spiritual, but they who are merely natural nourish it from such things in nature as correspond to them. This is why the dissimilitude of the bloods in men is as great and is such in quality as is the dissimilitude of their loves (*D. Wis.* x, 6).

THE PARTICLES OF INFILLING SUBSTANCE DIFFER IN QUALITY.

Truths require infilling substances of one kind, or from one type of correspondential source; falsities infill only with substances given off from the opposite genus of correspondential source.

Moreover, those natural infilling substances which the planes, still retained by man after death, have appropriated to themselves from the bloods during life, are not precisely the same in quality and power for any two men ever born. "Such is the appropriation of substances in each man that they never agree with the substances of another" (*2Adv.* 1377).

Furthermore, there is the greatest ground for the affirmation that every thought, every sense-image, every imagination,

every individual apprehension of truth, every rational concept and passing thought and perception, is of a specific type as well as quality; that if it is to become a stable acquisition passing over or continuing into the life after death, it both calls for and requires a store of infilling particles of strictly allied quality, and from sources in nature correspondent to itself; and that these infilling particles are not identically the same for any two thoughts, images, concepts.

Again, it is this spiritual structure that has been infilled on earth with fine effluvial particles given off by the actual objects and substances of the various kingdoms of nature, which is that by which the spirit of man after death continues to have connection, adjunction and relation with the kingdoms of nature.

By the inmost things of nature which the spirit takes with him after death "he has something relative to those things which are in nature, and also something correspondent thereto."

By them also "spirits and angels can be adjoined to the human race" (*D. Wis.* viii, 4-5).

There is here an absolute implication that if, during life on earth, the lowermost plane of the spirit or mind of man have infilled itself with effluvial or quasi-material particles from correspondential sources of specific quality and powers, then, after death, the spirit cannot be in the activity of his own life save as he seeks out, hovers about, and adjoins himself to objects giving off the same kind of sphere as that which his own form used to attract and with which it used to infill itself; and which are actually still a part of his form,—as it were the very skin of his touch. Whenever he can find that kind of substance, there, in that plane, he will be; and wherever the sphere thereof is transferred, thither he will accompany it.

An interesting thing is, that evil ones are always wanting to enter and infest heaven, and possess it to themselves and become part of the *Maximus Homo*. And since this would be possible only by means of entrance into the bodies and brains of men living upon earth, therefore they are continu-

ally assailing men, riding as it were on infection-spheres and substances of evil origin and power. For it is not the first choice of the legions of Evil to possess the swine,—but rather to possess men; for it is in the sensual of man forthstanding in the world that they see the foundation of heaven within reach of their assault and possible entrance. This is more particularly the case with the evil genii spirits.*

Thus it would seem that the great store and variety of natural objects and substances upon our earth is given in order that there may be supplied endless stores of effluvial emanations from sources of every conceivable correspondence; that every truth and every image and every interior conception which the mind shapes and loves and holds to, may call to itself, through the blood, a finest infilling of the least material primitives and beginnings of form derived from strictly correspondential origin; and may take that stable form into the other world.

In analogous manner every falsity, warm with self-loves, would draw its infilling from the fine spheres given off by evil substances,—correspondential and complementary.

Moreover, this would be the expression, in the organic structure-making of the as-of-itself life of man, of the law that every truth has one good which alone is its conjugal partner; and that to every falsity there is one evil which is its proper and own connective.

That substances and effluvial spheres emanating from sources of evil correspondence are absolutely antagonistic to the life of the higher planes of the spirit, and incompatible therewith;

*For an instance of the general law that men after death, that is, spirits, adjoin themselves to forms and objects giving off spheres most nearly like and allied to those which constitute their own infilling matter, see the piteous, the terrific implications of the memorable relation at the end of n. 1057 APOCALYPSE EXPLAINED, quoted below; and

recall the fact of the evil ones whose foothold is fermenting food.

For instance of this law for good, see all associations of the celestial with creatures of lovely correspondence, and the happy growth of minds in power of thinking truths by an actual extension of substance.

that, in fact, they close those higher planes at their mere touch; and that therefore they cannot infill truths, would seem to be manifestly involved in the following memorable relation:

Profaners and lovers of dominance, crafty and sensual men, are in a proprium which draws its delight of life from the unclean effluvia that exhale from waste matters in the body, and are emitted from dunghills and unclean sources. The mere approach and touch of such matters closes up the interiors of the mind or spirit, and opens its exteriors directed to the world and the body.

That such is really the source of the delight, nature and power of such men or minds is made evident after their death when they seek out and adjoin themselves to all evil and unclean places, substances, things ill-smelling and unwholesome (*A. E.* 1057, 659).

See also in this connection, the statement in the *DIVINE PROVIDENCE* as to those who are in enjoyments of the love of dominion from the love of self, namely, that their body derives enjoyment,—corporeal expansion and peace is effected,—from unclean things that titillate the fibres; which unclean things are, in general, cadaverous, excrementitious, nidorous and urinous. (*D. P.* 38.)

THE PLANES OF INFILLING.

The plane or part of the man or the spirit, which may be infilled and act as a stable containant, is of variable range. More than one plane may be infilled. But the particular plane which must be infilled if the human form created is to be a stable form, permanent and individual to eternity, is that of the mediate mind in which lie the organic will and understanding; the plane which is the lowest degree of spiritual substance carried in the father's seed: the highest plane in which the trend of race-history in the as-of-itself life has been able to leave its mark. This we know, because this is the lowest infilled plane which those who die as new-born infants carry with them,—and it suffices.

With those who die adults there is a certain subjoined plane,—almost the entire formation of which takes place after the time of birth,—that is also infilled, and is taken with the man, remains to the man, after death. This is the plane or sub-

stance of the natural, the sensual and sensual-corporeal, or the external memory. In this plane of substances the natural sense-images, habitual reflections, imaginations and day-dreams and the sense-images which conveyed all knowledge for all the man's life-long, are shaped and stored as a counter world, repeating that of his actual experiences.

The difference between those who die infants and those who die adults. Those who die adults have a plane acquired from the terrestrial and material world, and they carry it with them. This plane is their memory and its corporeal-natural affection. After death this plane remains fixed and is then quiescent though it still serves their thoughts as an ultimate plane. . . . But those who die infants have not such a plane but a spiritual-natural plane (*H. H.* 345).

This plane or substance of memory acquired by adults during the course of their life in the world must be that very plane and organic something noted as that "certain natural and corporeal soul" which man forms or takes to himself during life in the world.

Everyone's corporeal and natural soul is formed in the life of the body; so that everyone has his soul formed by himself from the life of the body. But the spiritual and celestial soul which is interior and inmost is formed by the Lord and cannot be formed by man in the life of the body. Hence the combat of spiritual things with natural and corporeal (*S. D.* 2794; see also *I Adv.* 927).

This also concerns the memory-substance noted as C in the following from the *ADVERSARIA*:

These things (concerning memory) do not fall into understanding distinctly unless it is known that there are higher and lower substances. For without substances no change of state is possible.

(a) Man's most simple substance is his soul. . . .

(b) From this is born the second substance which is that wherein are carried on those changes which are thoughts.

(c) From this again is a third substance wherein exist the changes of state which are called imagination. Here is the memory itself.

(d) To this next succeed those compound substances the nature whereof may be evident from anatomy. They are called organs or sensories, in which the sensations exist,—likewise by changes of state (*I Adv.* 925).

That the finer infilled, more interior part, of what is above indicated as C, is, at death, loosed from the body; and that this C then includes within it B and A, is specifically stated.

When man dies all that which is earthly is dissipated; but the man himself, that is, that in man which is called his natural mind which is a real substance, gradually, as the body is dissipated, is again gathered up; consequently also his superior mind which is called intellectual, together with the soul. For that substance whose essence is mediate between the spiritual and the natural (*cf. D. Wis. viii, 4, 5*) is first of all loosened from connection with earthly things, which is properly called the body, and carries with it, because it encloses, that superior substance whose essence is spiritual and which is called the intellectual mind, which is properly human or man; and this at the same time encloses the principal and purer substance of man, the essence whereof is supracelestial and is called properly the soul" (*2 Adv. 1374; FIBRE, 520*).

The real existence of these forms and substances, in the gray matter or cortical glands of the brain is clearly affirmed; and also that thoughts and imaginations are changes and variations of form in organic substances possessing extense; and that they do not exist apart therefrom.

The will and understanding are not an abstract spiritual something, but are subjects substantiated and formed for the reception of love and wisdom from the Lord. For they exist actually and are interiorly in the substances which make the cortex of the brain. That these substances are such receptacles is evident from the fact that they are the beginnings and heads of all the fibres whereof the universal body is woven, and that from the fibres extended therefrom are formed all the sensory and motory organs. "The changes of state of these receptacles are affections; the variations of their form are thoughts; and the existence and permanence of the latter and the former is memory, and their reproduction remembrance; both taken together are the human mind" (*D. Wis. v*).

Affections are mere changes and variations of the state of the purely organic substances of the mind, and thoughts are mere changes and variations of their form; and memory is the permanent state of those changes (*D. P. 279*).

The memory consists solely in changes of state which are induced by objects of the senses, especially by those that are heard. The changes of state themselves are what are induced; hence is the memory. But the exercising of the changes, or their excitation into act, are what is called imagination. Thoughts are similar changes of state, but more universal and perfect (*1 Adv. 925; see also 971*).

The will is a determination effected by a species of motion in the organic beginnings of the cerebrum, namely, by expansions and constrictions. These organic beginnings are most subtle parts in the cortex of the cerebrum, which, in the preceding pages, are called substances. When these substances undergo changes or variations of form, that these may then be led on into act, they undergo alternations of expansion and constriction. . . . By this means changes of state which are variations of form are determined into act (*ib.* 990).

Note also that actually "sensual things, not of the body but from bodily things, form the external not only with a man but also with a spirit" (A. C. 978).

THE PLANES OF INFILLING NOT THE SAME WITH ALL SPIRITS.

In the number quoted above from the work on HEAVEN AND HELL as to the difference after death between those who die infants and those who die adults, a certain very interesting point develops.

There is, of course, in the human form as an image and likeness, a certain full series of degrees without which it is not perfect. This full series of form our Lord's Divine Human presents. The nearest like unto it, is the series presented in the human of a fully adult and regenerate man still living in the sensual and corporeal body upon the earth.

Now with all men who have ever died hitherto, certain planes of this typically full and complete human have been personally lost, left in the tomb, at death.

But, according to the teaching in HEAVEN AND HELL, even among the men who have died, there is possible an individual difference in the number of the planes of the complete human retained by them after death.

Those who die as infants manifestly take with them one less than is possible to those who die as adults. Their arm is thus as it were shortened; the degrees they possess do not reach as far down toward that ultimate end of the series in which the return begins, as is possible, and as is an organic fact, with those who live a long full life before they die.

It is one of the important, the indispensable truths, that spirit is extended; that the organic thinking, feeling, indi-

vidual man, the mind, the spirit, as well after death as before, possesses extense. This is so important a concept that Swedenborg contended for it even among the denizens of the after-death-life,—since the opposite principle of belief contracts empty phantasies and false persuasions.

A certain spirit who in the world had believed that spirits were not extended was asked by Swedenborg what he now thought of himself who was now a spirit with sight, hearing, etc., so that he thought himself to be entirely in the body. Being held in the idea he had cherished in the world, he answered that a spirit is thought. But he was asked whether, since he had lived in the world, he did not know that the sight of the body cannot exist without its organ the eye; "sight *in se* is not extended, but the eye or the organ of sight is extended; also, the objects of sight are extended, but not the sight considered abstractly from its organ and objects. So likewise thought which is internal sight. I asked him therefore whether he can conceive of thought, or of that internal sight, without organics or an organic substance, any more than he can conceive of sight without the organ of sight. Of thought, regarded *in se* without an organic substance, just as of sight, extension cannot be predicated; but still it cannot exist without an organ from which and by which it may exist."

And Swedenborg further added that if the spirit were mere thought man would have no need of so large a brain since the whole brain is the organic of the interior senses; but the cranium might as well be empty. But the truth is that the organics of thought are in the brain, from which, by invisible fibres, it is led into muscular actions (*S. D.* 3470-1, *A. C.* 444).

Now, from the passage in HEAVEN AND HELL, it is evident that the extense of the spirit after death is not necessarily the same for all spirits; that, in fact, some may have an extense on planes others do not possess.

In addition, it is also evident, other things being equal, that among those possessing the natural-corporeal memory-plane, some will be more extended than others. It is in fact evident that with no two men of adult age will the features of the extense of the natural-corporeal memory-plane be identical.

This memory- and image-plane is not only the permanent external man with a spirit, but is an external man that necessarily varies with every spirit; since with no two men to the

end of ages would the experiences entering into it and preserved therein be identically the same.

FIXATION IS EFFECTED IN THE EARTHLY LIFE AND ENDURES
FOREVER.

There is the very greatest use or result accompanying every variation stamped in perpetuity here in this memory- and image-plane.

It is said that "there are no Divine arcana that may not be perceived and expressed also in a natural manner, although in a more general and imperfect way; and that they who from the affection of truth perceive these things naturally by their rational understanding, afterwards, when they become spirits, can both perceive and express these same things in a spiritual manner; and, when they become angels, in a celestial manner; but others cannot. For one Divine verity perceived and loved in a natural manner is like a crystalline or porcelain vessel which is afterwards filled with wine; and the quality of the wine is then such as was the truth, and the flavor of the wine such as was the affection of truth." (*De Verbo*, iii, 4.)

So long as man lives in the world he possesses an exterior or corporeal memory which grows, and in which are rooted the things of the interior memory. "The more concordances and correspondences of good and truth there are in and between these memories the more does he have of love from the Lord, and the more can he be perfected in the other life. . . . Man has the whole of this exterior or corporeal memory after death, but then it can no longer grow (either as a substance or in respect to any additions to it). New concordances and correspondences cannot be formed." Everything of it grown and formed while the man was alive in the world is retained by that man after death; but no more can be added after death, nor can it be changed as to quality, nor perfected further. This is the meaning of the common saying, "As the tree falls so it remains."

Moreover angelic wisdom and things interior and internal are added to the good after death "only according to the concordance and correspondence which were formed (*i. e.*, ingrown in the exterior or corporeal memory) between internals and externals with each man individually when he lived in the world" (*S. D. min.* 4645-6, *A. C.* 4588).

This is the plane which is formed by all objects of sense and by all sense-conceptions of high arcana, while the man lives upon earth receiving new truths and motions of love through eye and ear; and while thus, to all the growing substances and forms of this plane, the resolving, circling, blood still brings from moment to moment, the infilling sphere of quasi-material effluvial emanations from correspondential sources, to realize, substantiate them for the everlasting life as well as for the present.

And at death the whole of the subtler part of this structure, together with its delicatest infilling spheres or quasi-material infilling particles derived from "the earth," is drawn forth, separated from the grosser, textures, and remains, the permanent containant form of the spirit. But the infilling spheres of this plane become quiescent, giving the firm outline and cutaneous solidity and resistance and the individual definition of feature and member pertaining to that particular man everlastingly.

For "man's natural mind consists of spiritual substances and at the same time of natural substances . . . ; these latter recede (*i. e.*, become quiescent) when man dies. Wherefore that same natural mind, after death, when man becomes a spirit or angel, remains in a form like that which he had in the world.

The natural substances of this mind which recede (become quiescent) by death, make the cutaneous envelope of the spiritual body. By such envelope, which is taken from the natural world, their spiritual bodies subsist, (have fixed and permanent existence); for the natural is the ultimate containant" (*D. L. W.* 257⁵, 6)

All forthstanding ultimate stability and cutaneous firmness on any and every plane is attained by a collection of least particles,—quasi-material, or finest, subtlest, purest natural, derived from the earths,—combined with, or conjoined to, the structure delineated or formed in spiritual substance; that is to say, from the Proceeding Divine (see *Ath. Creed.* 177-8).

If you abstract from the human organization the more terrestrial parts "there remains nothing but a form derived from the determinations of the soul or of the inmost essence of the body, presented under an aspect similar to that which the sense apprehended when combined with terrestrial particles (*Brain*, 83).

"Thus, properly speaking, the body is this earthly loan" these "diverse corpuscles" small fragments of substances "from the three kingdoms of the earth," or gathered from the volatile spheres in ether and air. And "in the cortical glands of the brain itself, all that is corporeal in them (all of body) is borrowed for purposes of composition and derivation from the three kingdoms of the earth" furnished and brought to the brain by way of the blood-stream (2 E. A. K. 283, 301, 305).

This derivation of the infilling substances cutaneously defining, actualizing and bodying forth, is true alike for the spiritual body as for the natural. For the spiritual body is actually framed and infilled with natural substances while in those cortical glands.

DISEASES OF THE FIBRE.

CHAPTER VIII.

CATALEPSY.

448. CATALEPSY, CATOCHE or CATOCHUS* is a disease, in which, wonderful to relate, the person seized, becoming suddenly immovable like an image, remains rigid as a rock in that state which he had when he fell. On this account some of the ancients styled it CONGELATION. The patient remains in the same condition, not only in external state as to limbs† and muscles, but also as to internal state, namely, as to animus and mind, being held fixed in those ideas which he conceived before the disease; and he is the less turned aside by any object, in that he is dead to the external senses. There remains however a weak pulse and a slight respiration of the lungs.

449. Everyone acknowledges that the proximate cause of such disease is the sudden quiescence of the common sensory

**Catalepsy*, from a Greek root "to be seized," and *Catochus* (French *Catoche*), from a root meaning "to be held fast," are two names for the same disease.

†*Torus*, the word here translated "limbs," means literally "a swelling, protuberance," or "the fleshy or muscular part."

and the voluntary motory; and, therefore, also that it is a disease of the cerebrum; for who doubts but that the cerebrum is that common sensory and motory? But if one enquires further he will confess that it is the cortical and cineritious substance of the cerebrum that becomes thus rigidly quiescent; for this substance is the beginning of the fibres and the end of the arteries, and to it, through the fibres, flow sensations, and from it the determinations of the will into act. Consequently it must be this substance that becomes quiescent in this disease; and if, when it is quiescent, there exists such immobility and insensibility, it follows that otherwise it is not quiescent, but that it moves, namely, in alternations, like the systole and diastole of the heart or like the breathing lungs. This its motion is called animation. Hence on the animation of the cerebrum depends the faculty of sensating in the organs and of acting in the muscles. From this it is clear that the cause of catalepsy, apoplexy, carus, epilepsy and all other diseases that invade and affect the cerebrum can never be understood, still less be explained, unless we know the nature of the cerebrum; whence comes its life, that is to say, from animation, that is, from the alternate expansion and constriction of its cortical substance; and that this substance, taken concretely, is the sensory and motory of the body, common and voluntary.

450. In this way we easily arrive at the cause of catalepsy,* that is, at the cause of the immobility of the cortical cerebrum, namely, that it lies in the denial to the blood of reflux from the arteries into the veins and into the sinuses; for thus animation, that is, the alternate expansion and constriction of the cortical substance, suddenly stops, and, by consequence, the circulation of the spirits from the cortex into the fibres and through the fibres.

451. Reflux is denied to the arterial blood if the longitudinal sinus is suddenly obstructed; as for instance, in the place where it is joined by anastomosis to the lateral sinuses, when

*In the Latin text the word is error. See ch. ix, below, particularly n. 458.

the passage into one only of these is open, or when the passage into one is narrower than that into the other. Thus made turgid, the sinus spews back the approaching blood of the cerebrum. In order that nature may meet these conditions, she has added in many subjects a smaller sinus, also called the longitudinal, underneath the larger; and moreover, in some, she has constructed a communicating sinus between the two lateral.

452. Moreover, the superior longitudinal sinus is wont to collapse, and in this way also to refuse the blood of the cerebrum, if by chance the ligating cords of its walls, called the cords of Willis, by reason of too great tension are deprived of their power of reaction. Hence it comes about that in the bodies of subjects who have died of catalepsy the arteries and veins appear turgid with a packing of thick cruor.

453. The effect of this at once redounds on the cerebrum, namely, on its dura mater which is also distended and inflamed by the cruor; in like manner on the pia mater; on the whole cortex, and also on the medulla which goes off from the cortex; on the corpora striata, on the thalami of the optic nerves, and on the medulla oblongata. Only a slight amount of humor is carried off through the fourth sinus or torcular Herophili, that humor, namely, which the cerebellum introduces into the common viscera,—for the cerebellum still vibrates, though slightly, like the pulse of the heart and the respiration of the lungs.

454. If an obstruction of the longitudinal sinus, or also of the fourth sinus,—for, in cataleptic subjects this also may occur,—be the cause why cruor sticks in the vessels of the cerebrum from which it cannot get back through the arteries, the question arises, What is the cause of the obstruction? We answer, Every cause that renders the blood dry, thickens it, coagulates, defiles with heterogenous matter, fills with ramenta and fibres. Such causes are melancholy, excessive sadness, burning fever in plethoric subjects, quartan fever, retention of the accustomed evacuations, such as the menstrua and hemorrhoids; for when the blood is drawn into the cerebrum the better part is bestowed on the cortex and fibres, and the

grosser, cruder and blacker is rejected into the sinuses,—which blood is again vivified in the threshold where it is poured into the jugular veins. Also sudden terror which contracts the cerebrum and the cortical glands and banishes all the blood into the sinuses, which are venous receptacles; and from these it can effect no exit, since the other sinuses are also turgid with a like abundance, and the heart, timid and palpitant, is not able to admit and draw off the quantity that flows to it. Furthermore, inflammatory rigidity of the dura mater may also be the cause of the sinuses not intronitting the blood of the cerebrum; for the sinuses are situated in the duplicature of the dura mater, nor can they be expanded or constricted except by mediation of the mater; and with the sinuses remaining immobile the veins and arteries become turgid, and impotency of acting suddenly occupies the cortex; hence catalepsy. From this it is clear that this disease is for the most part deadly, or that it is followed by atrophy, dementia, epilepsy, convulsion.

455. But it is a matter of import that we reduce the causes into order. The verimost cause is, that the cortex of the cerebrum is unable to expand and constrict and thus to transmit its animal spirit into the fibres and through the fibres into the sensory and motory organs of the body, or into the muscles. On this account the several parts remain in the same state as that in which is the cortical cerebrum both in general and in its parts. The cause of the cortex being unable to expand and constrict is blood sticking immovable in the arteries and veins and in the innumerable receptacles situated within the medulla; and that the blood sticks thus immovable is due to the sinuses of the dura mater not receiving it; the cause of this is obstruction or excessive relaxation of the sinus; the cause of this again is dryness and crudity of the blood and inflammation of the dura mater; but the cause of this is intemperance of life, while the cause of this is unrestrained lust of the animus, and finally, the cause of this is too great indulgence of the mind towards its animus, and the condescension of the soul.

456. A kind of natural catalepsy, quite familiar to many persons, is frequently noticed wherein, as in a mirror, we can

behold the nature of morbid catalepsy. For there are those who, intent on some profound meditation, suddenly halt their steps, stand transfixed and motionless in the same state of body, countenance and senses, and, thus distracted, see scarcely anything except through a shade, nor hear anything except a kind of murmur; for some time also they hold the very breath of the lungs and when they breathe they carry on the alternations tacitly and slightly. Meanwhile the mind is intently fixed on a single object of the thoughts, nor is it drawn away by any motion of the body, or by any image of the sight or alien idea of the memory,—just as in the case of preternatural catalepsy. [In both cases] there is a like effect, nor is the cause unlike; for the cortex of the cerebrum, to which the underlying cerebellum is now obedient, is in deep rest and holds the blood at a distance from its little sinuosities and beds, nor, except sparingly, does it send it off into the sinus of the falx, which latter also is only slightly elevated and compressed. From these considerations it is apparent that profound meditation untempered by any variety may also be a cause of cataleptic disease, a fact moreover which is mentioned by many medical men as a matter of observation.

CHAPTER IX.

EPILEPSY.

457. The epileptic is suddenly prostrated, with loss of the senses, both external and internal, and interruption of the respiration; the body is tossed about with violent motions, and the ground is beaten with violent blows. Thus muscle rises against muscle, and the patient rages with paroxysms; so that there is a kind of combat of the life present with death, like the combat of death with life usual in the last agony.

458. That the cause of so dire a disease lies in the cerebrum is a fact which, I suppose, no one calls into doubt; for the source whence springs the life of sensation and the life of actions, is also the source of the death of the same; and it is the cerebrum alone that holds sway over the sensory organs and the motory organs. Therefore, from the effects is

recognized what is the state of the efficient cause. From this it follows that epilepsy is a furious tossing and convulsion of the cerebrum, or an inordinate fluctuation, elevation and constriction of its cortical substances, whose every idea cannot be represented by reason of the repugnances of the motions in the body. Oh, to how many changes is not the human cerebrum subject! and into what dangers does not that voluntary and intellectual precipitate us, which is properly our own and belongs to the cerebrum alone! Therefore, whatever stirs the cerebrum into convulsive motions of this kind, and exasperates it beyond the mode of its accustomed vibration and the symphony of its parts, that same is the cause of this disease.

459. The proximate causes are: [1] Contusions of the cranium or fractures of the spine, exfoliating or excrescences of the whole [cranium] which with their sharp points prick and pluck the cerebrum. [2] Partial rigidity and a varying inflammation, or also ulceration, of the dura mater; also the tearing away of this mater from its connections with the cranium, especially in the region of the bones surrounding the bregma* and of the coronal suture. [3] A collection of corrupt matter, pus, acrid and fetid ichor, sticking somewhere between the meninges,—but especially under the pia meninx and between the divisions of the cortex, that is, in the smaller windings and sulci,—and the consequent hollowed-out pits and worked-in recesses, wherein a malignant humor either breaks in violently, or else dripping in little by little stagnates, and putresces, and thus distends those openings so frequently that it cannot be wormed out except with the convulsion of the whole cerebrum. [4] Likewise similar collections, pittings and abscesses in the medullary substance of the cerebrum,—in its superior, middle or inferior region, around or within the ventricles,—or in the medulla oblongata and its beginnings and

*The bregma is a point on the top of the skull which marks the anterior end of the longitudinal or sagittal suture, where it meets the

transverse or coronal suture; in infants this portion of the skull is the site of the anterior fontanelle.

crura,† moreover little pools and asylums of the blood are frequent everywhere in the medullary portion, which, when beset with a sluggish and corrupt humor, deeply include the very root of the evil; hence come dilatations, displacements and distortions of the parts, erosions, ulcers. These causes, however, are the external causes belonging to the cerebrum, for they lie outside the cortex, being either above it in the integuments, or below it in the fibrous structure. [5] But the internal causes can be said to belong to the cortex itself, which, if it becomes schirrous, inflamed, indurated, putrescent, eroded or extinct, is then rendered impotent to break up or move forward the lymphs that are insinuated in the little folds; hence receptacles are fabricated for epileptic matter which by the delay resulting from stagnation will degenerate into purulent filth.

460. The causes that make the cerebrum to be thus ulcerated, pitted, corroded, or that bring these evils in and ingenerate them, are innumerable. CONTINGENT CAUSES are fractures, contusions, luxations or perforations of the cranium. NATURAL or HEREDITARY CAUSES are unusual interstices and cavities in either substance of the cerebrum; the constriction or narrowing of the ways leading to these interstices; the undue proportion of the cranium to the mass of the cerebrum itself; an ill distribution of the arteries; a radical vitiation of the blood. ACCESSORY CAUSES are malignant fevers, both hot and cold; the undue temperature of the blood and its serum; excessive excretions; concretions, and innumerable other circumstances. VOLUNTARY CAUSES are discordant motions, furies and tempests of the animus arising from insanity of the mind or from intemperance in the pleasures of the body. But the causes from which the above-mentioned evils exist are the same as those from which they subsist and by which they are excited.

461. The causes that rouse into effect this evil ingenerated in the cerebrum, (for the disease once inrooted breaks out at intervals), are, as was said, similar to those that produced it, such as: IN THE BODY acrimony in the things eaten,

†The thalami of the optic nerve and the corpora striata; see n. 104.

corrosions and irritations of the viscera; especially of the stomach and intestines, such as are induced by worms; latent ulcers, imposthumes, abscesses, great and periodical pains; retention of the urine, lochia, menstrea, hemorrhoids; pestiferous exhalations and fumes infesting the blood and nervous juice; also the roots of several diseases, etc. IN THE CEREBRUM they are sicknesses of the animus, which are so many motions, disturbances, expansions, constrictions, contorsions of the whole cerebrum, and sudden alternations of its animations. In this way the offscourings hidden away in their hiding places, and the concealed seeds of the evil are called out, whence arises collision, extrusion, intorsion; and thus the fibres and cortical glands, which are the most highly sensitive of all, are irritated. Thus the disease breaks out, and, as when a troop has been raised to which the gate is opened, so it rushes on.

462. When the evil aroused by reason of these causes breaks out, the universal cerebrum intensifies and assembles all its forces for the purpose of dispelling it. For a sharp point pricking any one part of the cerebrum makes the whole to contract, just as is the case with a nerve, a muscle, a membrane. For every single part, constricting itself for the purpose of bringing aid, exterminating the vitiation and escaping death, shuts up the exit, or else expands the narrow pathways, urges and exasperates the moving [fluid], and so, diffuses the convulsion; thus the universal cerebrum labors and seethes with vertigo. Especially, however, do the associate and neighboring parts act thus; and so all the fibres, and consequently the nerves and muscles that depend on the fibres. For the medullary fibres of the cerebrum flow together in various ways from the whole cortical circuit towards the centrum ovale, and again and again run together before separating. Hence the pricking of one fibrous congeries excites many muscles in the body into simultaneous paroxysms. By reason of a confused cerebral agitation of this kind the cerebellum also is deprived of all power of acting, which effects results as often as the cerebrum acts from itself; for when the one acts the other suffers, thus each is alternately in sleep and in wakefulness. Moreover, also, where the action of all things is con-

fused, there is no action; for one fibre acts against another and one muscle against another. Therefore the unhappy sufferer is thrown prostrate, he beats the ground, his mouth is tightly closed, his respiration interrupted; but with the interruption of the respiration the fury goes down, and the anger of the otherwise intractable cerebrum subsides.

463. The resultant effects are manifested in the nerves, muscles, glands, vessels, the circulation of the blood and spirits, and the chemistry of them all; but especially in the cerebrum; whence arises dullness, stupor, wandering of the memory, foolishness, paralysis, apoplexy and many other ills.

CHAPTER X.

CONVULSIONS, SPASMS, TETANUS, TREMOR, ETC.

464. The leaders of the medical art have not yet distributed all the varieties of convulsions into their genera and species, and still less have they designated each species with its own proper name; for many convulsions appear to have a similar source, but by diligent investigations one comes to a knowledge of their nature, and of the source whence they take their origin. There are some that descend from the cerebrum, some that have a nearer origin, that is, from the nerves; and there are some that originate in the muscles themselves, namely, from the state of their motor fibres, membranes, tendons, aponeuroses. There are some also that trace their origin to the arterial and venous vessels flowing into the flesh of the muscle. Consequently there are convulsions that are to be referred to paralyzes, to apoplexies, to epilepsies. Those therefore who wish to reduce all convulsions to one only of the above mentioned diseases, would seem to be hallucinated. By reason of the variety of species the learned have made a distinction between febrile convulsions and the other or ordinary varieties which recur at stated alternations or else are rigidly permanent; and also those which invade a single muscle, or a single joint or member. Hence the names, spasm, tetanus and so forth, all which are to be treated of.

FEBRILE CONVULSION.

465. *Febrile convulsion* is so called because it is a concomitant of fevers, and arises from the same causes, that is to say, from causes which obstruct the arterioles leading into the substances of the cortex; for the cortical gland is entirely dependent on its arteries; from them also it derives its essence which it transmits into the fibres. On this account the state of the fibres and consequently of the muscles is deduced principally from the state of the blood. Therefore, if the blood be gross, hard, insoluble, concreted into ramenta and fibres, viscous, not easily separable from its serum, the arterioles nearest to those glands are stopped up. Thus the glands are deprived of their essential and vital juice, and either they lie half dead, or else they are filled up with a fluid not their own, but from another elementary. Such fluid, however, is not adapted for running through the medullary and nerve fibres; thus neither for obsequiousness to the will of the mind; but it becomes adherent, and at the same time variously wounds and wearies the tunics of the fibres. Hence convulsions from an internal cause. Convulsions come in like manner from an external cause when the cortical glands are beset round about with a tenacious, and, as it were, glutinous excretion, so that in their little spaces they are unable to reciprocate their animations; this also is an effect of febrile disease. That most highly pure humor that runs through the stems which weave the tunics of the cerebral arteries and which, in the preceding pages, we have called vessels emulous of the fibre,—stems on which the cortical glands immediately hang,—is also a usual cause of convulsion, for there is great poverty of this humor in febrile heat, where it lies imprisoned in the serum and blood, nor can be extracted therefrom so long as the globule of the red blood remains hard and insoluble; neither, in such cases, is there any kind of humor exuded between the pia meninx and the arachnoid tunic, and with the drying up of this spring the interstices between the fibres are deprived of their unguent. It is clear from the anatomy of the cerebrum that the cortical glands, which correspond to the most active muscles in the body, are furnished with their own beds of

arterial trunks in the cortical substance itself, and with receptacles in the medullary substances, in order, namely, that from them they may draw their supply according to the degree of their activity. These receptacles, when filled up with crude and viscous blood, can bring no help to the beginnings of the fibres, and therefore the medullary, nervous, and finally the motor fibres are deprived of their motive spirit; hence arises convulsion.

CONTRACTION.

466. *Contraction*, also called *convulsion*, draws its origin, not immediately from the cerebrum, but from the nerves themselves, or from the blood-vessels on which the muscle depends. For whatever obstructs the passages or pores of the nerve, and whatever obstructs the arteries which flow into the muscle, is the cause of this kind of convulsion. A nerve is obstructed by a vitiated, gross and more tenacious humor sticking between its fibres and between its fascicles of fibres; for the fibres, thus rendered compressed, inert and impotent, cease to act into the muscle. Such humor springs either from its fountain, that is, the cerebrum; or from its arteries which run in abundance through the interstices within the nerves; or they are the remains of diseases of a vitiated blood. In the nerves or in the ganglia cavities are thus formed which in their movements are stuffed with ichor, and this, when collected, compresses the fibres themselves, and when bursting out, relaxes them; hence arise alternate convulsive motions. Contraction is called *TONIC CONVULSION* when part of a membrane or muscle becomes rigid and there is fear of it remaining in this state. A similar effect results also if a nerve is compressed extrinsically, ulcerated, cut, stretched; and so likewise an artery. The cause of the convulsion may also be present in the muscle itself by the injuring of its nerve and vessel; that is to say, when it is inundated with blood or inflamed, rigiscence occupies its motor fibre, membrane, tendon, aponeurosis.

SPASMS AND TETANUS.

467. *CYNIC SPASM** is like a convulsion,—arising from the causes mentioned above, when treating of febrile convulsions,

*Canine convulsion.

—in one hemisphere of the cerebrum or in one part of the hemisphere, especially of its upper lobe. For it is a distortion of the mouth; sometimes also it drags with it the eyebrows, nostrils, neck. It is called EMPROSTHOTONUS if it moves the shoulder-blades from their natural position; OPISTHOTONUST if it invades, twists and hardens only some individual part or member; it is called TETANUS when it is universal; and it is then a species of epilepsy.

TREMOR.

468. TREMOR or TREMULATION, as of the hands, head and other parts, and also as occurring in decrepit subjects, arises from divers causes, such as: [1] Defect of the spirits, extinction, stupor, torpor, sleep of many of the cortical glands and fibres of the cerebrum so that only few of them are voluntary agents which shall sustain the muscle. [2] Too great relaxation of the same; for with the loosening of their tension the fibres, impotent of action, lie down without law and order; for which reason there are interposed in the medulla of the cerebrum spurious glands, like piles and supports, which may restore to them their tension; so likewise in the two membranes, the pia and dura mater, the sinuses, and everywhere in the body. [3] A like relaxation in the nerves, that is to say, a relaxation of their ligaments, of the tunics covering the fascicles of fibres and the nerves themselves, and thus of the fibres; which latter flow along like stragglers, part of them lying extinguished and part being left to itself without any common dependency and relationship; a like thing then happens in the muscles and limbs, which, therefore, begin to tremble. The causes of the diminution of the spirits and of the relaxation of the fibres, are, however, many, such as the excessive use of venery, several kinds of intemperance, preceding attacks of paralysis, apoplexy or epilepsy, long-continued intermittent fevers, frequent swoons, old age, etc., etc.

†Emprosthotonus and opisthotonus are derived from Greek roots signifying, respectively, "bent forwards" and "bent backwards."

STUPOR, TORPOR, AND SLEEP OF THE MEMBERS.

469. *These diseases arise [1] from compressed muscles, vessels or nerves so that the joints are deprived of their bloods which are their several forces and potencies; [2] from freezing; [3] also from the causes which give rise to convulsions, for they exist in convulsions.*

HICCOUGH.

470. *HICCOUGH is a species of alternate convulsion. It is believed to be an affection of the diaphragm; but, while the diaphragm sustains the lungs, it does not enjoy the power of compressing and dilating them, for this is the office of the intercostal and several other muscles. Hiccough, however, seems to be an affection of the œsophagus where the latter is united to the trachea; and when the œsophagus palpitates, the air is drawn in so forcibly in order that the breathing-path of the larynx may not be occluded. Hiccough arising from cold, and from food imprudently conveyed into the gullet, also from weeping and other causes, does not of itself readily continue.*

SNEEZING AND COUGHING.

471. *SNEEZING is a high elevation and sudden compression of the whole cerebrum and cerebellum; and it is a natural means for the dissipating and cutting asunder of humors, and for the expelling to the exits constructed by nature, of those phlegms which stop up the beds, interstices and meninges of the brains,—especially if they beset the cribriform plate,—as is confirmed by actual experience. It arises also from an irritation of the olfactory nerves, the fibres whereof are ramified around the whole cerebrum. The lungs which animate synchronously with the brains, likewise, at the same time purge their bronchia and cells. COUGHING is excited from a similar cause, but in the lungs.*

YAWNING.

472. *Yawning is a gentle elevation and erection of the cerebrum to prevent it from falling into sleep. For when the*

animus grows languid, and no motion thereof expands and wakens the cerebrum, the latter naturally collapses into a state of sleep, and the folds mutually fold together, and, commencing from the lesser folds, begin to cohere. This is guarded against by such an elevation; just as in the time of early morning when the several parts are to be unfolded.

CHAPTER XI.

MELANCHOLIES, DELIRIUMS, MANIA, INSANITIES, LOSS OF MEMORY, TARANTISM, ST. VITUS' DANCE, ETC.

473. *The diseases whose causes I now commence to explore are diseases not only of the head but also of the animus and of that our mind which is called rational,—such diseases, namely, as mania, insanity, tarantism and the rest. Thus they are diseases not merely of the red blood but also at the same time of the purer or prior blood, that is, of the animal spirits which run through the fibres. Hence, these diseases very closely touch the influx of the soul into the sphere of our understanding; and those who make judgment respecting the different causes of such diseases, affections, deliriums, from the visible blood alone, treat a sublime matter in a very crude way, stopping only in the threshold of effects, and when they think themselves to see causes seeing only causates which they seize upon as causes. Consequently, for the thorough investigation of these diseases, it behooves us to enter more deeply into the inner recesses of animal nature; and then, at the same time, we shall be persuaded not only that there is a real influx of the soul into its body by means of the organs of the internal senses, that is, by means of the cerebrum and its cortical substances; but also that the soul is able to flow into its body in no other way than according to the state of the organic substances,—a truth which no one will call into doubt if only he deigns to contemplate causes from effects, or things prior from actual experience.*

474. *But preceding our enquiry, it is necessary that certain theorems be premised which may serve as the premises of the conclusions to be reached. Namely: [1] That the cortical substance is that to which, by means of fibres, external sensa-*

tions refer themselves; or, that there are as many little internal sensories, or little as it were eyes of the intellectual sight, as there are such substances. Thus, that the cortical cerebrum is the verimost common sensory and likewise the common voluntary motory. Consequently, that the cortical substances are those prime organs into which the soul inflows with her light, the effect whereof is understanding, thinking, judging, willing; for if these organr are in any way disturbed from their natural state, form and situation, the understanding, the memory, and all that faculty which is called internal and truly human, suffers and sickens.

475. Since each cortical substance is a little sensory and the symbol of our understanding, it follows, [2] That all, taken together, constitute, as principal parts, the cerebrum, and produce something common which cannot be called the understanding. For that which is proper to the part is prior, superior and more perfect, while that which is proper to the parts taken together, that is, to the whole, is posterior, inferior and more imperfect. Therefore, that which is proper to the cortical substance is prior to that which is proper to the whole cerebrum, superior and more perfect. Consequently, to the cerebrum in the concrete cannot be attributed understanding, thought, will, but only a certain inferior power, such as apperception, imagination, cupidity. The former are properties of the intellectual mind, but the latter of the animus. Confer the Transaction on the Fibre, n. 306, 307.

476. This also must be known, namely, [3] That the vessels of the red blood, ramified into the minutest capillacious vessels finally germinate the cortical glands, which hang upon them like clusters of grapes from the shoots of their vine; and that from these glands proceed fibres which, in the cerebrum, are called medullary, and, when continued in the body, nerves. These fibres, together with bloodvessels, construct the motor fibres in the muscles. Thus the motor fibres have respect to the cortical glands of the cerebrum as their origins which through the fibres transmit to them their animal spirits.

477. Moreover, [4] That the red blood, which is the seminary and treasure-house of all things in its kingdom, contains within it the purer blood, which is the same as the animal spirit

and which breaks out from the resolved globule of the red blood and is transmitted into the cortical gland and through this into the fibre. Likewise, that elsewhere also, that is, through the vessels emulous of the fibre, respecting which see the Transaction on the Fibre, chapter ix [nos. 168-187] a certain most highly pure serum is transferred into the same cortical gland, that it may serve as the matter from which may be elaborated and with which may be mingled the said spirit or purer blood.

478. Furthermore also, [5] That the cortical gland is affected according to all the nature of that fluid which runs through it and is thereby transferred into the fibre; scarcely other than as the sight is affected by every variety of the forces or modifications of the ether; the hearing by every variety of the modulations of the air; the taste by every variety of the parts that touch the fibrillæ of its organ; and so also the smell. But in the cortical gland the effect is more sublime because its sense is purer, superior, more perfect, as also are the substances and forces that affect it.

479. And finally, [6] That the cortical glands in particular and the cerebrum in general are able to undergo, and do undergo, an infinitude of states, or an infinite number of changes of state; that is to say, according to all that cause and variety of forces and forms which flow in and by which they are affected. As is the state of the cerebrum such is the state of the animus in the cerebrum; and as is the state of the cortical substance such is the state of the mind,—into which, the soul, when it flows in, can operate in no other way than according to its state; just as with the eye, namely, as is the state of the eye such is the sight,—although the ray or the solar light flows in in one way only; or, as is the state of the object illuminated such is the variagation of the light,—whence arise such varieties of color and shade. There is a similar ratio in all things in universal nature.

480. Each of the above propositions has been treated of in our Transactions, and from the little experience that was adduced we established that such is the nature of the cerebrum and that hence comes its faculty of sensating and understanding; but this will be still further confirmed by an infinitude of

experimental testimony. Meanwhile, without these premises we labor in vain when drawing conclusions respecting the causes of the diseases which are the subject of the present chapter. The diseases themselves shall also add their own signs of confirmation.

MELANCHOLY.

481: *Melancholy, regarded in itself, is not a disease, but is a temperament of the blood styled melancholic. Medically speaking, it is a sickness of the animus and body and sometimes breaks out into species of delirium and mania. But its nature, as it is in itself, is known from the character of the person affected by it. He is obstinate and tenacious of purpose, and in his meditation, stubbornly clings to certain objects and to them alone. Hence it follows that his nature is not what it is taken to be by virtue of the melancholy, but rather by virtue of his application and determination. Thus, if he be a friend he remains one; if an enemy he is a perpetual enemy. If elated in animus he falls into laughable pride; if ambitious in mind he is externally humble, frequently sordid, but inferiorly puffed up; stern with harsh haughtiness against all who do not feel as he feels. If envious he suffers anguish and becomes livid; if angered he is disturbed and falls into dementia; loving solitude, he places no value on society except as a means of obtaining the fulfillment of his purpose. He is perspicacious with ingenuity. He is strong in judgment if he takes glory therein, for he is obstinate and vehemently insistent. One who is not well instructed makes up dreams and phantasies which he thinks to be so many truths. If magnanimous he is intrepid, fearless, brave; if pusillanimous he is timid, foolish, avaricious, ever anxious about the future, loving himself and detesting all else. Thus among those who are afflicted with melancholy are the highly honorable, heroes, those born to the administration of the highest affairs, the industrious, the vigilant, the constant, the unchangeable, the square; among them also are the wicked, the profligate, those deeply steeped in crime, those bereft of all honor. For they all obstinately cling to the principles they have acquired. For the most part they are sad, sorrowful, spiteful, absent-minded, old*

before their time. The opposite of these are those who are of a sanguine temperament; for they are changeable, tractable, distrustful of themselves, prone to cupidities, lovers of delights. They are society itself, as it were; in genius like women,—by whom they are praised but by men disparaged, by melancholics despised,—men of the present age, but not of the ages that have gone before.

482. There are divers origins of melancholy, and thus, relatively to their causes, divers species. There is sanguineous melancholy, atrabiliary, outmost, belonging to the body. There is melancholy of the animus, of the animal spirits, more purely sanguineous, interior, belonging to the cerebrum; this is called sadness and anxiety. There is melancholy of the mind; this is properly human, supreme; it is a species of hatred of the world and of life. There is melancholy of the soul; this is spiritual, as it were outside ourselves, and is properly conscience which causes remorse and agitation. These four are distinct in origin and nature: nor is any of them to be called melancholy except the sanguineous or corporeal,—unless indeed by analogy. Nevertheless one so excites and produces the other that they coexist, and that melancholy, in appearing to be of one species, imposes even on the skillful. For black and bilious blood excites grief and sadness of the animus, this excites a superior grief in the mind, and this an evil conscience, or hell. So also the reverse; for an evil conscience produces hatred of self and torment of mind, this produces anxiety of the animus, and this a bilious blood. But all four must be well discriminated; for medicine must be prepared for each one according to the causes. We dispel effects in vain if the cause and root of the disease remains. If the blood is concerned in the cause it must be cleansed; if the animus, its sickness must be dispelled by changes and delights, and by such things as emend the purer blood; if the mind, its very desires, hope, principles must be alleviated. If the cause is spiritual, the medicine is theology from the Sacred Scripture; and if there be mingled with it a natural cause, it is to be remedied by means of sciences which apparently explain the mysteries of faith.

483. The real cause why the one thing produces and excites

the other, appears in clear daylight if we consider the influx of the red blood into the purer blood, and its transflux through the fibres and recomposition into red blood; that is, if we consider the circulations, which are three and distinct, and of which, nevertheless, the one inflows into the other,—which influx we have called the CIRCLE OF LIFE. Confer the Transaction on the Fibre, chapter xxvi (nos. 319-327.) Or, it appears also in clear daylight, if we consider the connection of the bloodvessels with the medullary fibres by means of the cortex. All these matters become manifestly clear from the anatomy of the brain, when this anatomy is opened up all the way to its causes.

484. *In true melancholic diseases the RED BLOOD is harder, insoluble, spurious mingled with genuine, concreted with fragments of bile, antiquated, obsolete and livid such as is ejected into the gall bladder and from thence through the feces, menstrua, hemorrhoids. Such blood cannot but tenaciously stick in the minute arterioles that pour immediately into the cortical substance. The PURER BLOOD or animal spirit which runs through the fibres, is hence rendered sluggish, cold, somewhat hard, not easily soluble,—just as in the case of the red blood; for the fact of the latter blood being harder, originates, in this disease, from a like nature of the purer blood of which it is woven. The CORTICAL SUBSTANCES themselves wherein our soul actuates its rational mind, derive thence a similar nature, namely, that they are somewhat hard, tenacious, not easily mutable in respect to their state of expansion and constriction, but sluggish and stiff in action. This is the reason why melancholic subjects are fixed in one object of thought and are tenacious of purpose. For it is the easy mutability of the accidental state of the cortical substances, and thence of the cerebrum itself, that causes the presence of perception, conclusion, determination; and this never obtains if the organs themselves are harder and more sluggish and the blood sticks in its tracks both in the vessels and in the fibres; for as is the state of the cortical substances such is the state of the fibres, and hence such the state of the common sensory, of the organs of the external senses, and of all else that depends on the fibres.*

(To be continued.)

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BY LILLIAN G. BEEKMAN.

VII. THE INFILLING AFFLUX, OR THE RETURN-STREAM FROM ULTIMATES.

The fixing or infilling particles, not alone of the spirit or mind but also of the sensual and corporeal human, are *help-meet* particles.

Whether in mind or body, we can understand their meaning, the uses and ends of their self-qualities and powers, only by studying them, seeing them, in consort relation to the human which they infill. This implies first of all some idea, some grasp and concept, of that human form of spiritual substance which is their consort,—that human form the degrees whereof are determined by and intimately delineated and woven of the very substance of the primordial substantiates of creation. For it is the form of spiritual substance which is the essential, flowing, living power and former,—the determiner.

All the peculiar qualities and laws pertaining to the infilling or help-meet particles are so connected with their possible consort relations, as to suggest that we must seek to understand them in their consort relations of use rather than separately and alone. Like Esthers, they share half the kingdom with the dominant consort who loves them; and the affairs and doings of that kingdom are much under their veto and their bringing to pass; for whatever their quality, if they are chosen, then, with them, all their family enters into place.

Nevertheless, their own life and actual determining force

in the kingdom, their place and rank in the kingdom of organism and form, are derived from the active power and the rank and character of that especial King to whom in substantial earnest they are framed providential consort; to whose turn of thought they are homogeneous.

For instance: A first law of the help-meet substances (the infilling and fixing effluvial particles given off by the individuals of the kingdoms of natural life and form) is this:

All the fixing or infilling particles are unstable or infirm in their place,—at least till the hour of death draws a line under the account. They are continually subject to be changed with every change of action of the form of spiritual substance to which they are united, at the pleasure of the latter. In the bodily form this stands clearly apparent. With every exercise of that form in its uses or pleasures, a stream of old infilling particles is going out and a stream of new infilling particles is subtly being insinuated in. Nutrition itself and all the mechanism thereof is but the selection, the preparation, the bearing and empowering and presentation of the new particles for favorable acceptance and insinuation. Yet, in the corporeal and sensual planes of form, what we know of this action is stiff, slow, clumsy, as compared with the action of the same law on the finer intermediate planes of the mind's organism. Indeed, the whole paraphernalia of the body and red blood is the basic spring-board or reactive, preparatory for the toss and leap and ascension of the stream of finer help-meet particles, that they may approach and surround and enter in and be presented to the finer organisms of the mind's or spirit's plane in the audience chamber of sensitive imagery; that they may enter, fix, infill, all the channels of imagery and feeling, and may, perchance, provide the supper of the King, and become a fixed and fixing part and power of the Kingdom's determinations of voluntary understanding, as homogeneous therewith.

Now, perpetually, in this more intimate ground,—this intermediate ground of the as-of-itself life and action of the mind,—up to the moment when the hour of death draws the line

of irrevocableness under the statement, there is no hour in which the help-meet substances,—infilling and fixing, substantiating and empowering, the curve of the line of present thought, or the slant of the accustomed channels of memory, recollections and imaginative images,—are not liable to be gradually thrown out under the action of developing, altering, lines of new thought, and a “change of mind” in its point of view, its curve, its series of idea.

In case of such change, after a little struggle, effort, undoing, only those help-meet particles of the effluvial, substantiate spheres fixing and infilling the old lines of thought, would remain, which were adaptable to the new thought. The others would be relegated to the discard Vashtis of the old regime. And to those that remain would be added stores of new particles of sister type and quality, and even more favorably consort to the new lines of thought, the new determinations, as being more homogeneous and derived from sources correspondent.

Moreover, every great change altering the habitual currents of feeling, will bring about the like results; especially if such alteration results from vountary intra-cellular efforts of the cortical glands of the cerebrum trying to break and resist old turn of feeling and habituated custom of imaginary associations. The help-meet substance or infilling of the old *goes*,—a discarded Vashti. What does not oppose or hinder stays, and new particles of like form are introduced, as consort bodies of delight and stimulus and help-meet services for the new, as being homogenous therewith.

It is here the survival of the fittest; this is, in fact, the intimate substantive basis and ground of the reality of the laws of the survival of the fittest.

Here, in this law, taken broadly, is the ground also of the statement that the hereditary derived to the infant-form of the spirit or mind through the body and blood of the mother, is as it were something corporeal and infirm which may be and is, if it be evil, all removable and dispersible from that form at regeneration. This infilling can be utterly shaken out and new

fixing and infilling particles provided by the Lord (*A. C.* 1414, 1444, 1815, 2005).

On the contrary, the ugly twist, the perversion, of the form of its consort spiritual substance of the same plane derived to the infant through the male line and seed, are not thus absolutely removable, but remain to eternity (*A. C.* 1414). Yet the plane of the seed where the train of race-hereditary, the racial as-of-itself life, is registered for hereditary transmission in spiritual substance, is fortunately a mediate plane of the human form, and is only rudimentary in the form of its transfer as seed. During the after-years of the human creature's organic growth, formation, reformation, much more is added of spiritual substance; and, by further generation of growth, and regeneration from the creative Human of the Lord made Divine,—as Father,—it may be added as being all of the very form of truth and good (*A. C.* 1432, 2034, 2083); until, in the massed outcome and result at the end of life, even as the pattern of the shadow qualifying the light produces color, so the black touch of the opaque paternal heredity from the finite father, mingled with the fullness given afterwards from the heavenly Father, gives only the peculiar color of temperament and power hereditarily individuating that human being for the everlasting life. For when regenerated, the old feature or face of the hereditary proprium remains as a source of transfigured countenance; and greater variety of results, quality, and qualifications, is thus attained for the form of the greater human, the racial human of the life-for-ever (*S. D.* 2347, 2350, 2351; *A. K.* 464 and note o, 465).

The first law of the help-meet or consort substances of various qualities is the unstable tenure of their place in the human form as a fixing substance,—and this even until the hour of death, when,—the form of spiritual substance having attained that growth of self-modificatory reformation possible to it in the eyes of the Lord,—further change is rendered impossible by a separation of that form of spiritual substance, together with its help-meet particles fixing and infilling, from its connection with the ultimate blood and bloodvessels. After that

no change can be made in the type, the quality of its consort substances. What it then has, it takes. Subject to the afterwinnowing of gestations, the voluntary shuts-to the adamantine door; nought now can alter or can mend eternal fact. It can neither receive of other types and quality, nor give off in its radiant activities spheres of other quality than those it imbibed from the blood in the earth-life, and whereby it infilled and made permanent the forms of its self-constructed representations, its day-dreams, imaginations, its thoughts, its principles, its repeatedly recalled memories, during the natural life.

Hence the diversity of odors breathing around spirits and going out from them; hence the statement that according to their odors spirits are classed and associated, and that they are never entirely removed from the presence and perception of the odors or states diffusing themselves as an effluvial sphere round about human beings living still on planes of bodily life; for instance, the effluvial sphere going out from a wife who is tenderly loved, is perceivable in heaven as a fragrant odor (*C. L. 171, fin.*)*

A second point is of interest concerning these corporeal help-meet or fixing substances, their gathering together, the organic preparation for their approach and their entrance into and conjunction with their consort form of spiritual substances, and the time and place of that first nuptial of spiritual and natural, of father- and of mother-substance, which renders the spiritual form a permanent form for heaven.

The exterior of the human seed, that is, its grossest degree of form and substance, is a representation in germinal form, of that mediate degree of the paternal spirit or mind which is the highest to which the as-of-itself life of man can reach to impress and to effect therein alteration and modification. Up to this plane of the spirit or mind enter the modificatory sensations of the outer world,—but no higher. Meantime, this plane is maintained by the Lord in an actual self-power to afterwards repeat by its own motions all previous modificatory motions

*For substantial definition of odors see 3 *Documents* 768, (Additions to *True Christian Religion*).

once impressed by sensations coming in from the external world, and this selectively as by its own force, will and election. This is the plane of paternal heredity and modification which is represented and transferred in the exterior or lowermost degree of the paternal seed, *per se*.

Now as the primitive germinal form of this plane in the paternal seed is woven of spiritual substance; and as the plane of it is actually the same as that plane which is the inner repository in the organic mind or spirit of all external experiences of the sense-organs receptive of the motions of the outer world; therefore this plane is actually a mediate between the spiritual world and the natural, and is capable of sensitively perceiving the motions of the paradise of heaven, and also the motions of the paradise of earth,—of the celestial and of the senses and body.

As it exists in the father's seed, this hereditary primitive form woven of spiritual substance is not as yet fixed and made permanent, even as a form for the spiritual world; and this for the lack of the infilling help-meet substances of the old mother earth and her kingdom of individual creatures. For the law always is that no form woven of spiritual substance alone is a fixed form, even for the heavens; for it is still like Sir Hans Sloan's bird (*D. L. W.* 344).

But when the fixing help-meet substances shall enter the inmost penetralia of its structure and be adjoined to it through and through, then by and with this act, the given mediate-form-plane of the paternal or spiritual, will become a form fixed, and will be rendered permanent and individual for both worlds forever after to ends of ages. After that infilling, its specialized individual form and plane can act on both worlds, can act in both worlds; and it is present in both worlds as a competent form for aye and aye. It can receive the action of both worlds in itself; it can address its attention to the one or the other alternately, or to the one more than to the other; it can sense the general modifications of the income of life and light through the organic world of degrees more interior and higher than itself, to which organic higher world it is in the

human form subjoined; and also it can sense all the play of modifications coming in through the organic world more eternal and ultimate than itself,—that more ultimate world and plane being subjoined to it of the Lord's own weaving as framed ready for birth in the human form.

Now, in the succession of epochs covering the formation of a human recipient form in the ovum and womb, it is so ordered that actually the above mediate plane given in spiritual substance in the paternal seed, does not receive those fixing and infilling substances fine as odors, like incense ascending from the ground up towards the organic heaven, (particles that are brought to it by and in the resolving red blood of the infant cerebrum), until the last possible moment,—after all the parts are formed, body and blood and heart; and when, under normal conditions, the babe is being born actually into the world's life and the breathable air.

The need of breathing and the effort thereto is the organic condition that ushers in these last changes of completion which first bring to this plane of the spirit given in the paternal seed, the stream of the ascending and resolving blood with its fixing and infilling help-meet substances, and which thus, as with a thread drawn back from ultimates to intermediates, knots together the worlds and the world-substances of heaven and earth, in an indissoluble bond of organic tissue and form made fixed and permanent for time and for eternity. Indeed, that which last sets in train and accomplishes this tremendous result is the simplest touch; no more, it would seem, than as of the touch of the hand of a child touching the electric key that sets a new-built ship softly afloat.

Certain cells in the medulla close to the cerebellum feel a lack of the full and customary amount of oxygen in the blood reaching them. On that feeling of lack they act. If all goes well and safely with mother and babe during the months of formation, this condition, stimulating the medullary cells, will not normally occur while the child is still in the hidden living cradle of the mother-womb, wrapped in its swaddling envelope of membranes, and swinging submerged in the watery lymph-

medium which fills the central cavity of its secundine envelope, and in the midst whereof it is suspended lightly by the great bloodvessels entering and leaving the little body. For while all is well and normal, always the sipping villous fingers mossing that envelope about, are dipped in the fresh streams and lakes of the mother-blood which fills full the large new-formed sinuses gaping in the texture of the womb like lakes of blood with inlets and outlets of bloodvessels that ever renew and keep fresh and oxygenated the blood supply, and from which these mossy villous fingers and prolongations of the secundine envelopes may draw at the demand of the child's soul.

Under such conditions, so long as no mortal ill befalls the mother, no tangling misfortune befalls the child, the contingent condition which brings about the infilling and fixing of that lower plane of spiritual substance and structure given in the father-seed, cannot normally occur until the child is actually being expelled from the womb into the light breathable air.

Indeed, the child then begins to breathe because that severance from the mother's stores of well oxygenated blood will itself, in the space of a pulse-beat, lower the customary percentage of oxygen in the babe's blood, and this will as swiftly be felt as a lack of oxygen in the little group of gray cells back in the infant medulla;—that little group of cells framed to be sensitive governors of this particular use. When the blood personally in income to them carries a percentage of oxygen lower than their organic needs, their instant reaction to the lack is by a certain convulsive contraction driving the animal spirit down their fibres and assuming control of the end-organs into which these fibres enter. Now the ultimate or corporeal end-organs into which these fibres reach their fingers are the fibres of the muscles, whose contraction forcibly draws asunder the firm walls of the closed chest-cavity. Then, as, when the handles of the bellows forcibly draw asunder and widely open the shut body of the bellows, the air rushes into the bellows' cavity by the canal of its open nozzle, so here, when the rib-walls of the closed chest are forcibly drawn apart

by the sharply contracting muscles, the medium surrounding the child rushes into the widened chest cavity through the prepared open channel of nostril and trachea.

Now, as the intrushing medium passes over the membranes of the nostril, the brush and stimulus and titillation of its stream passes over a most tender and nervously sensitive membrane lining the very entrance-way,—a membrane full of finest peripheral nerve-ends, the other arm of whose action has effective hold and connection upon the cerebrum. Then this most tender, most infantile nervous epithelium,—which has never yet felt peripheral touch and stimulation,—at the first touch thereof, from the soft intrushing substance rushing across it, reacts thereto and reacts after its kind, its connections, its office; and with its reaction the whole mass of the tender rudimentary nervous cells or cortical glands of the cerebrum is acted upon and also acts; so that these cortical glands, being as it were both drawn open and self-expanding, invite into their innermost beds of spiritual form heretofore occupied only by the soul or supreme essence, the resolved red blood approaching them from without and below.

Then for the first time it occurs that the finer and higher or middle blood,—resolving from the red blood-stream in the arterioles of the cerebrum, and bearing with its ascending stream delicate loadings of the substance of the earth and body, like the finest incense gathered from the affections of the heart and the ascending endeavors of the forms of all the earth,—approaches the myriad young cerebral cells in answer to their own expansion and call, and, entering their peripheral channels, goes through and through them, even to the very penetralia of the primitive twinned forms of the organic will and understanding belonging to the lowermost degree derivative from the paternal seed.

That the will and understanding are receptacle, self-determinant structures formed and substantialized, and in real existence, though invisible, in the substances of the cortex of the cerebrum, striated bodies, cerebellum and spinal marrow of which they constitute the nucleus; thus that there are “not two

receptacles but innumerable, and each one twinned (will and understanding) and also of three degrees,"—there being one such twinned structure substantialized and formed proper to and part of each grey cell or cortical gland of the cerebro-spinal nervous system in the nucleus thereof; and that they are capable of change of state,—of menace as well as of perfection; see *Divine Wisdom* v (quoted above, p. 9).

Therefore there are as many pieces of mind as there are grey cells of the nervous system, and it takes them all, in the complex of their peculiar social or associate order and ordination, to present a human form of that plane of the spirit or mind *in toto*.

As a matter of truth each cortical unit presents three degrees, on each of which is a twinned or consort receptacle. The two higher degrees are preserved unperverted and perfect in all men and in the race; the lower alone can receive perversions, and carries the race-perversion or the race-reformation in the father's seed.

The receptacles of the two higher, but not of the lower, are the dwelling places of the Lord,—and the dwelling places of the Lord during his conjunction with the conceived form, and His forming thereof (*D. Wis.* iii. 1, 6).

Now these two consort forms of the will and understanding of that hereditary paternal degree, up to the actual moment of the invitation of their infantile cortical glands opening wide and drawing in the resolving ascending ultimate blood, have been preserved as they were in the father's seed; that is, up to that moment, they are still woven of spiritual substance alone without fixing and infilling with the effluvial substance, the return emanation and as it were return atmosphere of finite modification and proceeding, ascending continually from the substances and matters of forms of the earth and her kingdoms. The use of the longest possible delay is clear. For as long as they are thus woven of spiritual substance alone, they are not merely forms unpermanent and unfixed even for the spiritual world, but they are still flexible, wholly passive for action from above and within. Thus the Lord's life can act

into and through them without their hampering, frustrating, the action. As they lack in their substance the ground of resistance and the fulcrum of self-assertion and manifestation. This is added, only when the stream of the living Divine Proceeding, which has passed to ultimates and has composited there as red blood from ultimates, rounds back to the mediate degree of the organic mind or spirit,—bringing with it the fixing infilling help-meet substances, the return atmospheres proceeding from the bodies of finite forms,—and, by the invitation of the cortical glands of that organic plane, enters centrally and fully, and gives to them that infilling which at once makes them permanent, and gives them, kneaded into the very substance of their form, the fixed fulcra of relatively passive substances which empower the self-contractive effort and determinative action as bestowing upon them a density and reactivity whereby they are empowered to act effectively upon the allied plane of the universe and in all the world of spheres and of radio-active emanations.

In each spherule (cortical gland, receptacle of will and understanding) "the congeries of the two interior degrees as to situation and flux was in the order and form of heaven, but the congeries of the lower degree as to situation and flux was in the order and form of hell. Hence it is that it was said that the receptacles with man are distinguished into three degrees one within the other, and that the two superior are the habitacles of the Lord but not the lowest. The lowest is such because man from hereditary pollution is born against the order and form of heaven and hence into evils of every kind; and this pollution is in the natural which is the lowest of man's life." (*D. Wis.* iii, 4; *D. L. W.* 432; *A. E.* 1224; *S. D.* 2487-2490; *A. C.* 1940, 1999, 1894).

The difference is, that previously the highest could act into and through them as through a flexible form without action of its own; but that now, the higher is able only to act into and from them; the intermediate has ceased to be without action of its own; it may coact with the higher, or it may frustrate and act against the trend and pleasure of the action of the higher.

At any rate the very lay of the fibres of that intermediate

form of spiritual substance, and the quality of its maternal infilling and fixing substances, are now potent as conditioning factors in every impulse and action of the higher, reaching the lower by courtesy and instrumentality of the mediate.

Before, when that mediate plane of paternal heredity in the seed was sent with a message, it took it unhampered, truly, fully, like a mind in unison with its soul; at least not playing tricks. Now, when the message is sent by its instrumentality, it may take it or it may not, or it may twist the message on the way, according to the personal, hereditary twist of the fibres of its construction and the quality and power of its subtlest infilling materia. Hence it is that the mind, or the conjunct life of will and understanding on that mediate degree which embodies the racial mind, enters upon its self-determinate activity only when the activity of the lungs is conjoined to that of the heart, *i. e.*, when the effort towards establishing breathing takes place.

In the safe, simple, first state of helpless exact obedience of non-infilling,—of spiritual substance alone,—the twin forms of will and understanding, given in the paternal seed in the lower or rudimentary plane, are kept through all the time of gestative formation and life, up to the moment when the call of the brain and blood of the infant for more oxygen precipitates the involuntary muscular struggle that draws asunder the chest walls; and the stimulus of the inrushing medium as it brushes over the sensitive membranes at the very entrance, passageway of nostril and throat, swifter than the lightning flash, causes all the tender cortical glands or grey cells housing the myriad wills and understandings to as it were endeavor to animate more strongly, to open, to expand.

In this endeavor they solicit and draw to themselves and into themselves and through and through themselves even to the very bosoms of the little organic chambers-in-the-wall of the wills and understandings, that resolving red blood, with its accompanying treasure of the help-meet material substances able to fix, to infill, to make permanent and empower all the reactivities and self-effects of the living spiritual forms into which they come, and to which they are conjoined as consort.

For only when the lowest containant form of the human mind given in spiritual substance in the paternal seed is at length infilled with correspondential substances from the earth and its kingdoms, is that spiritual form rendered fixed, and permanently individualized and specialized in the spiritual world of mind.

See concerning Sir Hans Sloane and the bird (*D. L. W.* 344); and concerning the necessary reasons for human spirits or minds being procreated first and formed upon earth,—and, while upon earth, in a red-blood-body receiving all its increase of growth, reformation, regeneration (*L. J.* 9).

Hence we may see the sense in which it is said that these forms in the paternal seed, which are the very forms of the will and understanding of the spirit or mind of the forming human organism, do not pass into the forming man to be his, to be himself, individual, permanent, until the living reflective organism which the Lord is growing into a completeness and fullness of degree answerable to the Divine Proceeding as Man, is framed for birth (*D. Wis.* v).

The will and understanding do not begin with man until the lungs are opened, which does not occur until at birth; for then the will of the man becomes a receptacle of love and the understanding becomes a receptacle of wisdom. The reason is because the lungs correspond to the life of the understanding, and the heart corresponds to the life of the will, and without the co-operation of the will and understanding man has no proper life. Therefore in the fetus in the womb, in which only the heart performs its motions but not the lungs, there is nothing of the life of the will and nothing of the life of the understanding; but only life from the Lord, whereby the man will afterwards live, carries on the formation.

In the embryo before birth there is life, but it is not conscious of it. For the life from which the embryo lives in the womb is not its own but is the Lord's alone (*D. Wis.* iv, 5, 6).

And thus it is that, with the effort toward breathing, even at the initiaiment of the involuntary nervo-muscular stimulus, the primitives of the lowermost will and understanding existent in each grey cell of the cerebrum, being thus infilled and

fixed by the afflux of the substances and matters carried into their very beds and centres by the invited tide of resolved red blood, are, by and with that infilling, made permanent forms,—permanent now for both worlds, and self-acting and self-contractual and reactive; and thus they pass into the human creature, the new creation of the Lord, to be its own for aye.

It was for this very thing that it was necessary that the human spirit or mind should be formed and procreated upon the substantial and material earth and in a red-blood-body.

The image of creation is spiritual (*i. e.*, of spiritual substance), but in order that it may stand fixed and lasting it must be materiated (*D. L. W.* 315).

The human which the mother gives is material (*Doct. of the Lord* 35).

Everything spiritual which man has is from the father and everything material which he has is from the mother (*T. C. R.* 92, 103).

It must be observed that the forms of man's members, organs and viscera as to their contexture are from fibres arising from their principles in the brain, but that they are fixed by substances and matters* such as are on earth, and from the earth in the air and ether, which fixing is effected by means of the blood (*D. L. W.* 370).

To return. The sufficient reason why this last cycle of events knotting together the threads of the two worlds as to the very substances thereof should not be precipitated normally until the very last moment,—if possible, not until the time of actual exclusion from the womb,—is easily apparent. It is an interknitting in a union-structure of permanent form, of the line of the series of Divine Proceeding as active atmosphere from its first and the line beginning in the God-Man essence,

*Note here in connection with the use of the two words, "substances and matters" and "substantial and material,"—usually together,—that "the substantial is the primitive of the material" (*T. C. R.* 79); that "the difference between the substantial and the material is but as the differ-

ence between prior and posterior" (*C. L.* 31); or "between components and compound" (*S. D.* 2191); also that the matters of the earth are formed of "substances and matters" (*D. L. W.* 305); and that the blood carries and conveys both in its tide.

or as it were the body of God-Man, with the line of the reacting, passive atmospheres given off as effluvial emanations proceeding from the body of earth and from material forms, and consisting of grosser primitives of composite structure like to that of which the parent reactive mass consists.

If, in the cycle of events bringing about this result of making permanent, of substantializing and materiating, the actual will- and understanding-forms of the lower planes of the spirit in the paternal seed, should occur before the moment of actual exclusion from the womb into the breathing air; that is, if the blood of the forming babe becomes deficient in oxygen before the moment of the event, then it is evident that the whole cycle would occur while the little one was still immersed and submerged in the little sea of watery lymph in which it swings suspended during all the period after appreciably full formation has begun. For if it did not thus occur, the nervous muscular spasmodic action on the chest wall would take place just the same; and, with the forcible expansion of the chest, then, instead of the light and breathable air, the surrounding medium, the watery lymph, would be inevitably drawn in through the nostrils and throat into the trachea. Now while it is indeed true that by every law of order and action the inrush of that watery lymph over the sensitive epithelium of nose and upper throat would be as efficacious as air, and probably even more promptly so, to stimulate by a first peripheral irritation the sensitive nerve-ends of the membrane to their use, and to excite the cerebral cells to that expansion and invitation which first draws into will and understanding the infilling substances and earthly effluvia that are to the human spirit or mind the necessary substantial basis of permanent and individualized form capable of the heavenly life of the spirit to all eternity; yet it can be seen that the same inrush through the nasal passage, of the lymph whose stimulus opens and infills and renders permanent for the babe the formal basis of the organic heavenly life of the spirit, so far as that formal basis was hereditarily given, would be instantly followed by an intrusion of the inrushing watery stream into the trachea and

the bronchia. And so, although the little one was indeed thus safely born into the heavenly life, yet the moment of this infilling and birth of the spiritual form in the heavenly world would be also the moment when the watery lymph intruding into trachea and bronchia, would almost preclude the possibility of successful birth into the earth-life,—as indeed seems to have happened in the case of little ones born dead, in whose trachea the inbreathed lymph has been found.

Yet when death impends for mother or for babe, the Lord's dear order has thus a way by which He, the Former in the womb, saves the infant spirit-form for the heavenly life, although the earth-life goes. And the same inciting organic cause that ordinarily guards the infilling and fixing of the form of the spirit until the moment of birth, will at once rush into operation in case, before birth, destruction was imminent for mother or for babe.

For after the parts of the body were formed, and the red blood and the body was immersed in the lake of lymph, no accident could befall mother or babe which would not, before death befall, so act on the medullary cells as to precipitate the whole series, and the first effect of this would be to render the spirit-form fixed and safe for the heavenly life forever, even though the next effect brought everlasting quiescence and death to the bodily members. At least it is difficult to think of any mortal mischance to mother or child which would not make itself felt by the guardian grey cells as a lack of oxygen in the blood reaching them, and this more speedily than any dart of death could come to them.

Thus the one and the same cause acts normally to prelude the series of events which in the spiritual form, before the moment of birth, will, if abnormal conditions occur, rush into act at once, though the child be as yet hid in the womb, its members known only to the creating Lord; and at once, in any danger or harm threatening to mother or child, rushing into action, will precipitate the completing change and thus save the new formed human being or mind for eternity, if not for time.

For instantly, at the opening and infilling and infixing of the organics of the mind in the brain, the little one is already a competent, permanent human being with fixed cutaneous envelope in the spiritual world and in spiritual life, even though, in a moment more, it should softly and unconsciously drown in that very liquid medium which had been hitherto its tender surrounding watery atmosphere, its softest guard, and nurse of its growing form.

DISEASES OF THE FIBRE.

XI. MELANCHOLY. (Continued.)

485. *But the question is asked, Whence comes sanguineous melancholy? We answer, From all causes that render the blood harder, such as, from retardation and inhibition of the universal circulation, that is, of the circle of life. For if the red blood accomplishes many circles and is not resolved nor rejected, then it grows hard, antiquated, and obsolete. This is caused by nourishment that is crude, terrestrial, too much cooked and boiled and thus dead; by all the causes of indigestion, whence arise the souring of the foods in the stomach, rancidity, depravation of the chyle; by a scanty besprinkling of the saliva and the gastric juice, and a larger one of the pancreatic and hepatic juices and of the bile, in which case the chyle is carried off through the thoracic duct or insinuated immediately into the veins, crammed with these juices. It is also caused by the occlusion of the excretory passages for the feces, urine, menstua, hemorrhoids, sweats, and Sanctorian perspiration. Moreover, it arises from an excessive excretion of innocuous lymphs; from wakefulness, whence comes feverish blood; from excessive sleep, whence comes grossness of the blood without fever; from poisons, which harden the blood. Such constitution of the blood, or of the ducts that serve for its commingling, resolution, separation, extermination, is also hereditary; thus melancholic subjects are also born.*

But the genuine causes of melancholic blood are: Too scanty an afflux of the purest blood which is produced ever new in

the cortical substances; causes arising from a failure of the variation or mutation of the state of the cortical substances; also from a failure of transpiration through the purest pores of the cuticle, by which failure the blood is deprived of its serum or vehicle; thus the pellucid globules of the blood are rendered more sluggish and tenacious,—as is the case with the old and the decrepit who, for the most part, are of a melancholic nature and are dullish in respect to the faculties of sensation. But there is a connection of all the causes.

486. *But whence comes melancholy of the animus, or anxiety? When not immediately from the blood, it comes from almost all the sicknesses that are attributed to the animus, such as sadness, grief, anger, envy, fear and other affections which we have in common with brute animals. These affections all spring from their own causes, to enumerate which, would be too prolix; in civil society there are new incitements every day. As was said above, these causes flow into the bloods, and indeed, immediately into the purer blood or animal spirit. This they render more sluggish and tenacious; for all the opposite causes, such as gladness, love, joyfulness, dilute it and keep it agile. Thus one cause flows into the other, like one blood into the other through the circle of life. Sadness thickens the blood; anger excites the bile; fear induces cacochymia,* and closes and empties the ducts; envy commingles bile with the blood, whence arises lividity, emaciation, blackness of face and blood. The effect is the continual effect of the cause; the cause produces the effect but the effect excites the cause. Therefore as is the blood such is the animus, and as is the animus such is the blood.*

487. *But whence is the state of the mind that produces a similar effect? There are many affections proper to the mind, which, regarded in themselves, have nothing in common with the sicknesses of the animus; such as all desires and cares for the future, self-providence, divers loves of ends, intense stud-*

*Literally, a bad state of the vicious humors in the blood, humors. It is defined by Blane- namely, a degeneration of the cart (1777) as an abundance of blood, serum or lymph.

ies, perverse principles of morality, and many other things that are not found in brute animals. But because we mortals for the most part indulge the passions of our animus and the pleasures of our senses and body, the mind is swayed by its animus; hence, without some special investigation, it is difficult to discriminate these desires of the mind from the affections of the animus, although they are most distinct from each other. Let us take the desire of some future happiness which we contemplate with assiduous mind and which is sometimes nourished by present hope. If we are suddenly deprived of the hope, we fall prone into a kind of despair, nay, into hatred, either against the one who causes this deprivation or against ourselves; this straightway produces sadness of the animus, and, by this means, a melancholic blood. So likewise in the other cases.

488. As regards the supreme cause of all, which we have called the spiritual cause, and the evil conscience arising therefrom together with its torments, this cannot arise immediately from the rational mind unless that mind has been instructed in sacred and divine laws and commandments; and unless it acknowledge the soul, its immortal life, heaven, blessedness, God the deliverer;† otherwise it is not spiritual but natural. Wherefore, it traces its origin to the soul, which is spirit, and to the Divine Spirit, which notes, represents, inflows, withdraws. Flowing from these principles this conscience is called temptation, and as to its origin carries nothing in common with the causes mentioned above and which, in themselves, are posterior. Moreover, descending into the rational mind, from this into the animus, and from this into the blood, it also perturbs, inverts and robs the whole animal organism. They who deny this its origin and assert only a posterior origin,—it is indeed also excited by the blood,—are either ignorant of, or else tacitly discredit, the soul, its immortal life, heaven, blessedness, hell, God the deliverer; and their conscience is thus either nil or spurious.

†Vindex, the word means Defender, protector, deliverer, vindicator; and also Avenger, punisher. It well illustrates that class

of words whose meanings extend from opposite to opposite according as viewed in relation to good or to evil.

THE HYPOCHONDRIAC DISEASE.

489. *The melancholic disease described above has also the vulgar cognomen the hypochondriac disease, even the hypochondriac affection, and is ascribed to some juice or VAPOR* which is called melancholic. Such vapor is believed to rise from the stomach immediately into the brain and to constrict and perturb its organism or sensory. The reason is, because the hypogastric region, that is, the stomach, mesentery, omentum, pancreas and spleen, are affected with a certain dull pain, and a sense of constriction which is immediately followed by anxiety sometimes breaking out into wailing or a species of delirium; moreover the stomach is kept constipated with crude and earthy dregs and coagulated matter, with which also are intermingled the biles.*

490. *But the proximate cause of this disease or affection is an obstruction of the chyliferous and lymphatic vessels,—both those which discharge into the left subclavian vein through the mesentery and the thoracic glands, and by way of the thoracic duct, and those which spring from the pancreas, spleen and other viscera situated in the hypochondrium, and irrigate the blood with a perennial fount. This lymph mingled with animal juice, being the purest of the lymphs, is drawn up towards the cerebrum and delivered to the cortical glands, that it may be remanded into the fibres,—all, that is to say, except the abundant supply that is exhaled between the arachnoid tunic and the pia meninx and is transferred to between the fibres. Confer the Transaction on the Arachnoid Tunic, chapters ii, iii, iv, v [nos. 342-365.] Such lymph is poured out in immense abundance from the viscera under the diaphragm, especially from the spleen, to say nothing of the other viscera whose lymphatic vessels flow together into the thoracic duct. When the cerebrum is deprived of this lymph it straightway*

*This word is capitalized by the author perhaps in connation of the name "the vapors," colloquially given to hypochondria; other colloquial names are the blues, spleen.

low spirits, and, in the French, the imaginary or English malady. It is characterized by illusions and inordinate anxiety in respect to the personal state of health.

labors and is anguished; for the very fibres become dry and contracted, and, at hand and urgent, stands mere blood with a sluggish and coldish serum, and which is not resolved, nor, when resolved, can enter into the penetralia of the corticals. This lymph is, as it were, the chyle of the medullary and nerve fibres, just as that juice which is carried immediately from the stomach, is the chyle of the veins and arteries.

491. Therefore the cause of the hypochondriac disease is the cessation of the circulation of the lymph called the lymph of the thoracic duct. The immediately resulting effect redounds upon the cerebrum, for this is straightway deprived of its vital juice on which live its sensory organs, that is, the cortical glands and the fibres. Hence comes a change of the state of the cerebrum, that is to say, a difficult elevation or animation of its corticals with an unexpected constriction; or else, the influxion of a non-vital serum, a useless drive of the red blood, and a vain solicitation without any conveying vehicles. Hence arises a universal anxiety,—for the whole kingdom labors. For any other lymph than that which is most select and is gifted with animal spirit can hardly enter those subtle passages. Therefore it is this lymph, together with the better blood, that is continually drawn towards the cerebrum. Thus this disease is not the ascent of any vapor from the stomach towards the cerebrum; for whatever grossness is in the chyle or is brought into the blood is not taken into that superior region which demands lighter things.

492. A blood that, of itself, is hard, not readily soluble, not genuine, that is, a melancholic blood, demands an abundance of such fluid and swollen lymphatic vessels, in order that its defect may be supplied by adventitious aid, in lack whereof a MELANCHOLY breaks out which is then called VAGUE and WANDERING.

493. The lymphatic vessels and chyliiferous ducts are closed by causes in the body and by causes in the cerebrum, that is, in the animus. The causes in the body are crude, earthy, dead aliments and viscous matters; the superfluity and retention of these in the stomach and intestines. They are caused also by

condensed air, colic and acute pains; that is, by flatulence which distends the stomach and intestines, whence come eructations and vomiting through the fauces. Causes in the body are an abundance of bile which overloads the chyle; a lack of saliva, of the œsophageal and gastric juices; the indigestion thence resulting, and every cause of indigestion; a laxness in the structural substance of the stomach and the cessation of its vermiculation and peristaltic motion; and many of the conditions described above when treating of melancholic disease.

494. *But causes in the body do not produce this wandering melancholy, or the melancholy that returns by alternations, unless the blood in itself be melancholic, that is, be of the quality described above, n. 484. Hence the animus has a proclivity to sad emotions or mutations; and therefore there are causes in the cerebrum or animus which directly concur. These are what produce the disease; but they are excited by causes in the body, and by causes outside the body. By CAUSES IN THE BODY, namely, by all the causes recounted just above, such as flatulence, sourness, rancidity and crudity of the food, and the other causes; for there is a wonderful correspondence of the state of the stomach with the state of the cerebrum, or rather, of the cerebellum; for the villous tunic of the stomach and its extended fibres announce to the cerebellum as by a certain sense, the state of their viscus. In this way the cerebellum is disposed, just as is the cerebrum by sensation and pain in the skin. Hence causes of the motions of the animus which are latent and from the body; and consequently the constriction of the ducts, both lymphatic and salivary, and the unloading of both kinds of bile. By CAUSES IN THE CEREBRUM OR IN THE ANIMUS,—which have been enumerated above, n. 456,—arising, namely, from sadness, grief, anger, envy, fear, etc., that is to say, from causes outside the body,—as sadness arises from misfortune, losses, death, injuries, change in the love of parents, of friends, and a thousand other causes; so likewise with fear and the other sicknesses [of the animus]. When these are excited the circulation of this lymph is at once stopped, the stomach is constricted, the vessels of the mesentery*

are stopped up, and into the closed thoracic duct no lymph can flow in from the other viscera. Thus it is the animus that so suddenly constricts them. It is also the animus that expands them, as, for instance, gladness, joyfulness, the pleasantness of society, free conversation and the like, while the contrary affections present contrary effects; for the body acts and suffers according to the state of its cerebrum. From this it is apparent how greatly merriment and amusements contribute to the digestion of the foods, the dispensation of the chyles, and the promotion of the circulations.

495. There are, besides, other ducts still more subtle which lead immediately from the stomach, lungs, nay, from the universal external skin of the body towards the cortex of the cerebrum and cerebellum; these we have called vessels emulous of the fibre, or corporeal fibres. These in like manner are opened and closed according to every affection of the animus. But these matters are to be treated of elsewhere.

THE HYSTERICAL DISEASE.

497.* The hysterical disease is also to be classed among melancholic diseases; for it is a suffocation of the womb and its ducts, which extend to the cerebrum and the pia and dura meninx thereof. Thus a parallelism may be instituted between this disease and the hypochondriac. Hence a sharp pain, called CLAVUS HYSTERICUS,† is felt in the pericranium.

498. That there are frequent communicating ducts between the womb and the cerebrum and its meninges, is a conclusion

*The Latin editor notes that in the MS. "between the paragraphs numbered 495 and 497 respectively, is found the number 496 but without any paragraph appended thereto. Nor (he adds) can we account for the fact that the numbers only are irregular while the series of the subject remains uninterrupted." It would seem as though the author had intended either to add another

paragraph on the subject of hypochondria, or to add another subsection with a separate title. But confer n. 504, a paragraph number which is repeated.

†Clavus Hystericus (*clavus*, a nail) is a headache, found particularly in hysterical women. A most acute pain is felt in the front part of the head as though from a piece of ice or the boring of a nail; hence the name.

drawn not only from the fabric of the womb itself, but also from the passions of gravid women, from the growth and nutrition of the embryo, from the influx of the maternal imagination into the little body of the infant, from the erection of the Fallopian tubes and their fimbriæ, the state of the ovary and of the retained menstrua, and from many other phenomena.

499. The path that leads from the uterus towards the dura meninx and at the same time towards the pericranium is along the periosteæ, through the tunica vaginalis of the medulla spinalis, towards the great foramen of the occiput, and thence to both of the periosteæ, namely, the external or the pericranium and the internal or the dura mater. That this path is, as it were, the royal road for a certain humor which, finally, is either exhaled or goes off into the capillaries, will be demonstrated in its own place from many considerations. Therefore, from causes belonging both to the body and to the animus, when the uterus is suffocated and its ligaments, tendons, and connections with the bones and periosteæ complicated,—a circumstance which may happen after childbirth,—the above mentioned circulation ceases. Hence results an effect that redounds upon the pericranium,—from which arises *clavus hystericus*; and upon the dura mater,—from which arises difficulty of respiration, dull pain, and anxiety.

MANIA.

500. Mania is the last stage of melancholy; for the blood of a maniac is exceedingly hard, almost insoluble, sharp, livid, black and badly coherent with heterogeneous matters; genuine globules float sparsely in its serum; it is born but not unborn. Being thus copious, it is, as it were, bile and bitterness. The purer blood, the globules whereof are naturally elastic, divisible, flexible, yielding, is likewise tenacious, coherent, not easily yielding, fibrous, and thus not of its own nature active, unless from some stronger impulse, because not passive. Hardness cannot indeed be attributed to it such as is attributed to the red blood, but only tenacity,—which tenacity is its hardness as compared with its own nature of extreme flexibility. Thus in maniacs the red blood is radically sick. For a compound derives its nature from the quality of the component parts.

501. *As is the blood such is the ARTERY; for the tunic entirely accommodates itself to the nature of its blood. Hence it also is somewhat hard, and still more is this the case with the least or capillary tunic which is next to the cortex. To it sticks a blood that is indocile as regards passivity, is blocked up, is not capable of motion in one direction or the other, and sits unmoved unless urged by a stronger force and compression. The common arteries or little trunks are blocked up with a similar blood, and become turgid. In like manner the FIBRES which are smeared with a tenacious purer blood or animal spirit. The cortical GLAND, being midway between the arteriole and the fibre, must necessarily be beset with a similar blood as the fibres; and therefore these glands also become rigid, that is, they offer obstinate resistance to changes and respire illy and only with sluggishness and dragging. That the state of the cerebrum is such is a fact taught by actual inspection of corpses; for the cerebrum of maniacs is seen to be "dry, hard, friable, yellow in its cortex, with its vessels turgid, varicose, and distended with a black tenacious cruor." See Boerhaave's APHORISMS ON MANIA, n. 1121. Similar also must be the state of the arachnoidal lymph and also of the lymph of the thoracic duct which partakes of the purer blood; hence the general friability.*

502. *The causes of the breaking out of melancholy into mania are all those that have been mentioned above in treating of melancholy, but sharpened to the highest degree. That is to say, there are causes in the blood, causes in the animus and also in the mind. Causes in the mind produce those in the animus, and causes in the animus produce those in the blood; but causes in the blood excite those in the animus and these those in the mind. Thus the superior causes are the genitors of the inferior, and the inferior are the excitors of the superior.*

503. *From the state of the bloods, arteries, fibres, cortices, in maniacs, in a word, from the state of the cerebrum, is judged the proximate cause of their fury, namely, the fact that the cortex, wherein the soul actuates its rational mind, remains almost immutable without a blink at the presence of affluent*

objects, and thus in a single idea of thought; hence dreadful imaginations and lycanthropia.* For the cortical glands are most highly exquisite senses, since taken together they are the internal sensory; they undergo accidental change of state according to every cause and variety of the forces and forms that flow in, or, they are affected according to every nature of the fluid that runs through them. Confer above n. 478, 479. For whatever is not changed according to the forces that rush in, that same neither sensates nor consequently perceives their form, harmony and disharmony; but it acts solely according to an impressed idea, whether appropriate or not appropriate,—and therefore is insane.

504. Moreover, hence also comes the force and strength of insanity, in that the parts of both the bloods are not smooth and most evenly round, but are sharp, rough, and closely set about by sharp-pointed or sulphurous and volatile urinous elements; for what is hard and tenacious does not dissipate the angular adhesions that flow around in abundance; thus spicula stand out everywhere. Consequently the blood globules, being also prickly, when they run through the arteries and fibres, and especially through the tender and sensible walls of the cortex, prick, ulcerate and wound. Hence arises sickness excited to the highest degree and even to insanity; and pain, not sensible as in the body but as in the mind, emotion and passionate violence; and persistent wakefulness.

504 [a]. These, however, are the causes of insanity but not of mania; for insanity is of the mind, while fury is of the animus and maniacal action of both. We can be insane and yet not furious, and furious and yet not insane; the two can be separated and also conjoined. To be insane is to think, judge and will perversely; but to be in fury is to imagine dreadful things to oneself, to crave things unnatural, or to act contrary to every order and law of nature without any fear or horror. Although, in themselves, these conditions are distinct, yet it is

*A species of hydrophobia. The patient imagines himself to be changed into a wolf. In its root

meaning, the word signifies "wolf-man."

not given everyone to perceive them distinctly. Insanity is judged from the state of the corticals, but mania from the state of the whole cerebrum. Hence we must know what special property belongs to the state of the corticals and what special property to the state of the cerebrum. The special property of the state of the cerebrum is the situation, fluxion and connection of corticals, fibres, and vessels, whence its form and figure. That in maniacs the state of the cerebrum is a perverse one is a fact manifestly evident from the tenor of these same causes; for the arterioles and fibres, thus turgid and stuffed up with cruor, contract and become shorter; the cortical glands, suspended midway between their arterioles and fibres, are moved out of their natural situation and their connection with the neighboring glands; thus the harmony of consociation is lost, and consequently the mutual respect between the principal parts. Thus the state of the cerebrum is perverted and the animus is affected; hence arises fury together with insanity, that is, mania.

505. When the red blood sticks in its vessels and the white and purer blood in its fibres and in the cortical glands, the cerebrum labors with immense effort and with its entire forces to dispel that which obstructs; for it stretches its powers (animas) according to the ratio of the resistance. The resultant effect is that immense strength is added to the muscles; for as is the acting force of the cerebrum such is the force of the muscles that depend on those fibres or forces. The rule is, Whatever state is put on by the corticals, the like state is diffused into the fibres continued therefrom, and consequently into the whole system woven of fibres and bloodvessels. Confer Transaction II, n. 202. This robust, bold, strong and hard quality is therefore noticed in the several joints, in the motion of all the viscera, nay in the sense and the very speech and the articulation of the words.

506. Maniacal diseases can be distributed into their genera and species, for they are as many as are the subjects or cerebra. There are as many genera as there are natures of the blood, states of the corticals, both in themselves and in respect to

their connection with their arteries and fibres, and states of the cerebrum, that is, natural inclinations. There are as many species as there are determinations to one emotion of the animus rather than to another; for there are determinations to anger, or to revenge, or to sorrow, or to love, or to pride, or to many emotions simultaneously. Considered particularly, they are to this or that species of anger, revenge, sorrow, love, and so forth.

INSANITY.

507. *Careful distinction must be made between insanity and mania. Insanity is of the mind, but fury is of the animus, and maniacal action of both. Insanity is a perverse state of the corticals, but mania is a perverse state of the whole cerebrum. Confer, n. 504 [a]. There is hardly a mortal who is not in his own way insane. He alone is sane and acts wisely who worships God, thrice best and greatest, and by faith aspires to eternal bliss; and the wisest is he who regards not even this bliss, except as a consequence, but the glory of the deity as the principal thing. From this description of wisdom it is clear what insanity is, minor or major; for insanity has its minimum and its maximum, and consequently its degrees. What the insanity is, its nature and intensity, is known from the ends which the mind has in view and follows up. The further these ends recede or withdraw from the one and most universal end, the greater the degree of insanity, the greatest degree being when they oppose it diametrically; then they are carried away from wisdom, that is, from the deity, the beginning and the end of the universe, and are delivered over to themselves and their own insanities and to the devil.*

508. *This insanity however does not properly take the name insanity, because it is universal and is believed to be truly human, and indeed, of such nature that the world declares those to be insane who are not insane. But medically speaking, an insane person is one who acts contrary to accepted propriety and the customs of society, or, still more, who obstinately defends his own opinion against acknowledged truths and the judgments of a sound mind, and pursues it to the*

contempt and derision of the vulgar, that is to say, who, deranged and empty of mind, exposes himself to public sport. Such insanity is a perverse state of the rational mind and consequently of the cortical substances in the cerebrum. It arises from divers causes, that is to say, from causes above itself, from causes below itself, and from causes without and within itself. But it would be a lengthy undertaking to weigh the several origins, species and effects; nor do these have regard to pathology but rather to psychology. Pathology goes no further than the red blood and the purer blood, that is, no further than the body and animus, and hardly to the latter except conjointly with causes in the red blood and the body. Let it suffice that insanity of the mind is the interior and superior cause of sicknesses of the animus, and that delirium of the animus is the superior cause of diseases of the body.

DRUNKARD'S DELIRIUM.

509. *Delirium arising from drunkenness is a species of wandering insanity; for the cerebrum becomes dizzy, the joints and feet totter, the head sinks uncertainly, the speech lacks point and wanders, the senses grow dull and not consonant with the internal senses, the imagination becomes fanatical, and that which is voluntary is dulled and delirious; as for the other symptoms, who does not know them? Wine, vapid wine,* spirits, fermented must, beer, nay exhalations, are what produce it, and this by way of the gullet or stomach. Therefore it belongs to the blood, to the sensory and voluntary motory, to the cerebrum and consequently to the corticals; and it consists of an abundance of sharp-pointed and diversiform parts which when they are pushed through the tiny beds of the cortex and the little channels of the fibres, prick and tear them and rouse the substances into motions not their own. Therefore the cause of this insanity lies within the cortex; if it lies outside the cortex a like effect also results, but with a difference.*

**Vappa*, wine that has lost its spirit and flavor. Blancart defines the word as meaning "a humor which brings neither pain, heat

nor corrosion. and which by cooking or exhalation, has been deprived of all the virtue formerly within it."

510. *The state of the corticals is such that they actuate nothing of themselves and their own spontaneity, but stand ready to be acted upon by causes below themselves, which flow in, that is, by the senses, the body, and the blood; to which several causes, the corticals are so open that as soon as they are acted upon they begin to act in a similar manner. Hence from perception of things sensible arises thought, from thought the forming of judgment, and from the forming of judgment will, which is the conclusion of the operations of the mind. The cortical substances are as it were intellectual eyes into which flow the light of intelligence from the soul and images and ideas from the field of the memory; not unlike as with the eyes of the body into which flow natural light from the sun and images from objects. Therefore these cortical substances perpetually illumined with intellectual light, behold nothing rationally until images and forms flow in from the memory and the senses. Meanwhile they stand ready for the influx, which latter is effected as soon as anything from without or below is represented, to which are associated related ideas so that one common idea shall stand forth. But when the cerebrum is inebriated, the blood drawn up thither is circumfused with an abundance of angular and diversiform, that is, of vinous entities, so that the substances are no longer open to the influxes of ideas from the senses and memory, in order, namely, that they may put on suitable states in accordance with all those forms. From this comes a passion unlike the action, and an action unlike the passion, that is, disharmony, and hence delirium.*

511. *This delirium is varied in subjects according to the causes that produce the inebriation and according to the states of the inebriate, hardly otherwise than is the case in mania and insanity. Dull minds, or languid and lax cortical substances, are stimulated into a better and more responsive life, while lively and expansive minds become sorrowful, or fall into passions, or grow furious. Sad and anxious minds refuse the influx, and the things that flow in beat in vain upon the walls of*

the corticals, collapsed and almost insensible. Joyful and happy minds become tremiscent at the presence of the tiniest points in contact with them. Subjects whose mind is enfeebled and their cortex ulcerated,—such as the sick, the melancholic, and the aged,—grieve and more quickly become delirious. Subjects in whom the circulation of the two bloods through the vessels and fibres is brisk, the discrimination of humors in body and cerebrum prompt; the natural chemistry of nature vigorous; who have an abundance of fluids, a fatty blood, cortical substances and fibres that are healthy and not thin but thick,—such subjects become inebriated more slowly. The other effects also can easily be learned from a knowledge of the causes. From the effects of inebriety is known the mind and animus of each subject.

FEBRILE DELIRIUM. PHRENITIS.*

512. *Delirium is also usually a concomitant of burning and acute fever. In this delirium what the patients sensate they perceive differently; thus they do not think and judge like as they sensate, but perversely. The external and internal senses are frequently so dissentient that the patients dream while wide awake; see things not seen, and hear things not spoken; act without cause as if from a cause; pick at trifles and nothings as if such things were actually present; pick off bits of wool; are terrified at their friends as if they were furies; see children as giants, and the things they meet with as spectres, to say nothing of other ghosts; they pluck at trifles and speak insanities.*

513. *Fever is a cause of delirium, the general cause being heat of the blood and its close union with the serum. Hence the whole chemistry of the body lies destroyed; for the blood ought to float freely in its serum and to be separated in the arteries,—especially in those of the cerebrum where the blood-globules are to be resolved into their elements or constituent parts and to be passed separately through the lattice-works of the fibres. But this is now prevented by the copulation of the serum and blood; and nevertheless those little hearts, that is,*

*The Phrensy, inflammation of the brain, brain-fever.

the cortical glands, and an abundance of fibre, necessarily demand some juice that they may draw their breath and sustain the whole system. Hence in place of spirits they attract and absorb some thin serum stuffed with urinous spicula and sulphurous ramenta. Thus in place of animal spirits comes a guest of alien genius,—a guest which of itself is not fluid, nor compressible, soluble, animal, and still less vital; but is resistant, hard, sluggish, cold, and at the same time pungent and pricking. Such stranger-flow, unless commingled with a vital fluid, cannot be ruled by the cortex of the cerebrum, and does not fly at its nod to its ultimate bounds, that is, to the motor fibres in the muscles; but, unless continually thrust on, it sticks in its steps. Hence arises pain and impotence in the cerebrum, languor in the muscles, debility in the body, depravation of all the humors, and universal cacoehymia.

514. *The substance of the cortex and also the fibre, when traversed by a lymph of this kind, which is not its own or vital and which yet perpetually pricks it, is driven into motions not its own, lacerated with stabs, enkindled by a heat not of life but feverish, and finally becomes numb and stiffens itself against the stings; the cerebrum meanwhile never endeavoring by compression to disperse these things. Thus an active state is put on not correspondent to the state of the organs of the external senses; nor is the mind passive in accordance with that which the senses act, nor the organs of the senses passive in accordance with that which the mind acts; for they do not apply themselves to each other. Hence arises febrile delirium and phrenitis.*

515. *The above is the state of the cortices and fibres. The other parts, becoming inflamed, grow rigid,—such parts, namely, as the meninges, both the pia and the dura, also the vascular portion of the cerebral medulla, and so, by connection, the tunics of the nerves and fascicles. Inflammation also then invades the optic nerve, nay, the eye itself and its tunics and humors, and also the ear and its tympanum and fenestræ. Thus the state of the external sensory itself is also perverted; hence a two-fold cause of delirium.*

516. Just as febrile delirium and phrenitis invade chiefly the cerebrum so paraphrenitis invades chiefly the cerebellum. That is to say, in place of the spirits and purer blood, a certain serum not of its own nature elastic, compressible, soluble, vital, but dead, hard, sluggish, beset with an infinitude of little saline and sulphurous daggers, is intruded into the cineritious substance and fibres of the cerebellum, and thence into the muscles, joints and viscera depending on these fibres, that is, on the par vagum and the great intercostal nerve; hence, from a like cause, there redounds to the several parts, such as the pleura, diaphragm, lungs and the parts of the abdomen, disobedience, a refractory force, impotence and torpor. The cerebrum and cerebellum hold the kingdom of the body divided equally between them, so that where penetrates a fibre of the cerebrum there also penetrates a fibre of the cerebellum; the one rules in the daytime, the other at night. Consequently, when the fibre of the cerebrum succumbs, the fibre of the cerebellum, now forsaken and almost deprived of companions, labors with immense effort to arouse the forces of the muscles.

517. Moreover, from a like cause the meninges and the vascular substance of the cerebellum are inflamed and become rigescent; and with them the tunics of its nerves. Thus from a double cause there arises a resistance together with an acute sensation of pain, since the fibre of the cerebrum is living. This incredible pain is felt in the respiration and in all the acts which depend on the respiration; that is to say, in each one of them, and especially in the more vehement, such as coughing, sneezing, stretching, emission of the urine, unloading of the feces, vomiting; hence the effort after suffocation, and many other symptoms.

LOSS OF MEMORY.

518. In the several diseases, as in melancholy, insanity, fever and so forth, there are degrees between their minimum and their maximum; but among the class of diseases acknowledged by medical men nothing is included except what is in the ultimate degrees. So with loss of memory. There are some in whom the memory is feeble; some in whom it is wandering,

returning only at intervals; some in whom, either from nature or from cultivation, it is very slight; and there are some in whom the whole memory suddenly falls away so that they return into the state of infancy. This latter stage of loss of memory is the first to be acknowledged as a disease; nor, until it has reached this stage is it given over to the care of a medical man but is left to the healer nature. In this stage the memory of the past has so far perished that the patients remember not the least thing, not even in respect to the words, speech and actions into which they have been initiated by use and cultivation. Except in regard to stature, body, and an infantile sucking and wailing, they are as it were unborn and reborn, since they have fallen into oblivion of everything; and this to such an extent, that they are obliged to learn anew from nurses and masters the very rudiments of life and knowledge; that is to say, they commence life over again. From these considerations, rationally digested, you yourself, if you wish, may cast the votes analytically, and consider whether it is a case of the soul having emigrated from its body and another soul succeeding in its place, or whether the soul is one thing and the rational mind another. Anyone who is sound will conclude that our rational mind is not the same as the soul, but that our reason can be perverted, become insane, nay, can be destroyed together with its organism, while the state of the soul still remains. But these matters will be treated of in our psychological Transactions.

519. Meanwhile, in order that we may know whence comes loss of memory, it is first necessary to know what is memory. In the whole study and pursuit of psychology nothing more wonderful is met with than the memory, nor anything more difficult of disentanglement. Its nature might indeed be expounded to the understanding of many persons, but not in a few words; for the commencement must be made from principles hitherto unknown. To expand our sails at this point is not advisable, but I will relate as much as may suffice for the intelligent.

520. Memory cannot be an image pictured in the cerebrum;

or spread upon a tablet one over the other; nor can it be an image impressed and laid up in little pockets from which it may be called for uses; this is diametrically repugnant to nature and to reason. But memory ought to be a change of the state of some organic substance wherein the soul actuates its rational mind; thus, necessarily, it depends on the change of state of this organism that the images and little modes of the senses are retained in the memory. But if change of state is the cause of memory we must enquire what is change of state. Speaking briefly, the state of the corticals and of the cerebrum is changed in divers ways, whether it be that those substances are expanded or constricted, hard or soft, active or passive, hot or cold, tremiscent or tranquil; naturally, whether they be gross or fine, consist of abundant fibre or of little, besides an intrinsic variety which is infinite. But to enumerate all the genera and species of the changes of state would be prolix. Meanwhile this truth is clear, namely, that the perfection of purer substances consists in their being able to undergo, to put on, and to suffer to be induced on them, every variation of state. Whatever therefore cannot change its state, that same is imperfect. The entities of purest nature are therefore most perfect in that they are able to be accommodated to every change of state, and, in a moment, to run through the several states with such great variety that there is not the minutest phase of variety,—singular and universal and general,—that can possibly be thought of, to which they may not be applied. I know that I speak strange things, but what does it matter since they are true! Let us be enlightened by an example: The eye, which is the organ of sight, while grasping its objects and images, undergoes by that very fact, innumerable changes of state; that is to say, a different change for each species of color, harmony, disharmony; for each degree of shade and light; for each degree of distance, multitude, magnitude. For each one of these it variously contracts or expands, pushes out or draws in, turns, its pupil, iris, tunics, humors, retina; and applies itself to the object in such way that it receives and is affected exactly as the state of the object requires. This cannot be un-

known to any one who pays attention. The like also happens to the drums, fenestræ and cochleæ of the ear; to the papillæ in the tongue and to the universal body from the diverse states of the things in contact therewith; who then doubts it of the cerebrum? From the organ of natural sight let us now pass to the organ of rational sight or of the ideas of the mind, that is, to the cortical substances which are the organs of the internal sense corresponding to the organs of the external senses, being so many little cerebra or so many minute eyes. Since these substances are entities of purer and more perfect nature it is necessary that they be able to undergo changes of state infinitely greater in number and perfection than can the eyes; that is to say, to be disposed to every influx and reception of images and modes from the external senses,—potentially in infancy and effectively in the following age. But the question is asked whether change of state can be the same thing as memory? I say that it is; for purer organic substances are apt of themselves to the putting on of every state, and the state is induced by influx from the senses, thus through use and cultivation; and a state that is induced, remains, and it returns just so often as there is a relapse and a turning to that state, that is, just so often as the mind or its organic substances, that is, the cortical substance, revolves and turns itself from that state in which it is, or into which it has been reduced, to all similar states. That which flows in is perceived or sensated; hence by the changes of state resulting from the state induced, thought is excited, from thought judgment, and so on. But these operations appear to be too physical, and therefore there cannot but be a doubt as to how that which is metaphysical and spiritual can be accommodated to these same laws. This however comes for demonstration in our psychological Transactions; for it must be known what the soul is, what the spirit, what the body, what the animal spirit, and how one flows into the other; the terms themselves must be explained and the nature of each thing signified by the words be brought out, before we enter upon an exposition of the thing itself. If the thing is clear and the terms unknown then we speak by mere occult qualities

as though speaking Greek to the Latins and Latin to the Greeks. Meanwhile let us agree in this, namely, that memory is a state induced on the organic cortical substances of the cerebrum wherein the soul actuates its rational mind.

521. In order that the causes may be perceived we must add that there is a memory of universals and a memory of particulars. The memory of universals is that which corresponds to our thought, and the memory of particulars that which corresponds to the imagination. The memory of universals is the intrinsic or internal memory of the corticals, while the memory of particulars is the extrinsic memory of the corticals, or their common state. But these statements are still obscure, for the matter is one that cannot be expounded in a few words. Thought itself is an active state of the memory of universals, and imagination is an active state of the memory of particulars. They may be conjoined and they may also be separated; for there are those who excell in the memory of universals and consequently in judgment, and there are those who excell in the memory of particulars or in imagination; rarely are the two memories entirely conjoined. But let us come to the cause of loss of memory.

522. There are many causes; to wit, proximate and remote, and also internal and external. The PROXIMATE CAUSES are the red blood and the purer blood. If the red blood penetrates all the way to those passages which lead into the beds of the cortical substances then it not only stops up the pores, impedes the influx and empties the cortex and fibre, but it also moves the cortex from its place and thus takes away its faculty of change of state, so that, influent spirit being deficient, it is unable to run through its states; and if it does run through them then one cortical gland does not correspond to another which has been moved from its seat, and thereby is destroyed their harmonic variety, their mutual respect, and order with its rules. The REMOTE CAUSES are those which are the causes of the proximate cause such as mania and acute fever, besides an infinitude of other ills. For there is no disease invading the cerebrum which is not the cause of some loss of memory. The INTERNAL

CAUSES are over-intension of the mind upon one subject, and the resulting over-expansion [of the cortical glands] so that they are incapable of springing back; or their over-compression so that they are no longer expansile and versatile; likewise their rigidity, laxity, etc. The EXTERNAL CAUSES are ulceration, wounding, destruction of the glands, such as pricks of poisons, the biting of sharp-pointed parts running through them, wounds inflicted on the cranium and on the cerebrum itself, tumors, hydatids, inflammations of the cortex, medullary substance, meninges, rheumatic obstructions, divers sicknesses of the animus and many other causes. From the symptoms is known the source of the cause, and whether curable, permanent or deadly.

FANATICAL IMAGINATION.

523. Loss of memory involves also loss of imagination and thought, for imagination is the active state of the memory of generals and particulars, and thought is the active state of the memory of universals and singulars; thus when the one perishes, necessarily the other also perishes. But there is a fanatical imagination, or an internal sight,—in the daytime almost without any use of the external sight or eye, except a very dull one; this is called HEMERALOPIA, and when it occurs at night NYCTALOPIA.

524. But before we can know the origin of such violent phantasy, we must first know what imagination is and what thought; also what is the difference between them, and how the one acts into the other. That imagination and thought are in themselves distinct faculties is a fact noticed in brutes; for these enjoy imagination but not rational or intellectual thought. And that they can be separated is a fact noticed in somnambulists, and also in individual human subjects; for there are subjects who excell in the one and not in the other, and the two faculties rarely exist in like degree in the same subject. Imagination belongs to the cerebrum, but thought to the cortical substances of the cerebrum. Thus imagination is an active state of the corticals, that is, of the principal parts of the cerebrum; that is to say, it consists in the whole cortical gland put-

ting on a change of state generally; for the cerebrum can imagine nothing to itself except by means of its parts which are organic. Thought on the other hand belongs to the parts in the cortical gland; for, in that it is an organ, a little cerebrum, a little sensory, it must consist of parts, namely, of a pure cortex which is the origin of the simple fibres, disposed in the utmost order according to the most perfect form of nature. Thus thought is a change of the internal state of the corticals. Consequently, a like state of all the corticals in themselves constitutes the gyre of our reason.

525. From this description the nature of the state of fanatical imagination is apparent, namely, that the cortical substances of the cerebrum remain rigidly in a state that has been once induced, and do not suffer themselves to be bent therefrom into other states. Therefore they do not dispel, dissipate and remove strange and illy consociated ideas that come to them; but either they absorb these and thereby immensely augment the idea conceived, or they reject them as non-concordant. For in every rational analysis there is a certain form compounded of particular ideas and these again of ideas still more particular; among such ideas there must be a perpetual difference, in order that, taken together, they may constitute a certain rational harmony which is the same as the analysis itself; thus there must assuredly be insinuated relatives more or less opposite,—which are not admitted into the sphere of this fanatical imagination. This rigidly permanent state, if it be also enkindled, made active and subtly tremiscent, namely, from a certain self-augmented longing and grief, then refuses all the objects of the sensible things that flow in by way of the external organs, and turns them aside, or else it admits them as exasperants.

526. The cause of so dire and dreadful a phantasy is every cause mentioned above as being the cause of mania, phrenitis, and deliriums; thus every cause arising from an immoderate and acute heat of both bloods, from the hardness, unition, or grossness of the parts; from the blocking up of the arteries, corticals or fibres,—unloading into the veins and sinuses of the

dura mater being denied them; consequently from the inflammation of the corticals. Likewise from sicknesses of the *animus*, namely, from grief thereof, sadness, the sudden extinction of hope or a relapse from the highest degree of internal joy and natural light into the lowest, and into gloomy sorrow,—this event resulting especially from an excess of love or of pride. Moreover also from a most intense application and ardor of the mind; and from a confused convolution of ideas and thus from the precipitation of the mind from the sphere of a certain light into a sphere of shade,—especially in the case of those who ardently desire to contemplate the state of the soul after the fate of the body, that is, when intellectual faith studies to attribute the greatest part to itself.

527. Moreover the state of the sight itself, that is, of the eye, is also usually perverted, namely, by inflammations, fluxions, contusions, tumors; affecting its tunics, humors, uvea, iris, pupil, retina, optic nerve. Thus images are represented to the *animus* which induce a state unlike the things themselves; hence likewise come illusions and things imaginary. But so long as the mind is still sane such illusions can easily be dispelled, the fact that they are sports and fallacious and fatuous appearances being well enough perceived. On the other hand, if both sights, the internal and the external, labor under a like sickness or rigidity then the evil is doubled.

(To be continued.)

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No. 3

TRANSACTIONS

OF THE

EIGHTEENTH ANNUAL MEETING

OF THE

SWEDENBORG SCIENTIFIC ASSOCIATION.

The Eighteenth Annual Meeting of the SWEDENBORG SCIENTIFIC ASSOCIATION was held in the Parkway Building, in the City of Philadelphia, on May 13, 1915, Dr. Frank Sewall presiding.

1. The **Minutes** of the Seventeenth Annual Meeting were adopted as printed in the NEW PHILOSOPHY, for July, 1914.

2. The Chair appointed the Secretary a **Committee on the Roll**. The Committee reported an attendance of twenty-five members and eleven visitors.

3. The Report on **Membership** and Subscriptions to the NEW PHILOSOPHY was as follows:

MEMBERSHIP:

New Members since May, 1914	6
Resigned	9
Died	6
Net Membership, May, 1915	219

NEW PHILOSOPHY:

Members, also Subscribers	212
Subscribers, not Members	26
Total Subscribers	238
Exchanges	14
Free copies (mostly to Libraries)	68

NEW MEMBERS :

Frederick A. Finkeldey.

Gustav A. Keller.

J. S. Pryke.

Mme. R. de la Rochecouste.

C. Rydings.

M. B. Warren.

4. The Board of Directors reported that three meetings had been held during the year. At the first, held on May 13, 1914, immediately following the adjournment of the Annual Meeting, the following officers were elected: *Vice-President*, Dr. F. A. Boericke; *Secretary*, Prof. Reginald W. Brown; *Treasurer*, Prof. C. E. Doering; *Editor of the New Philosophy*, Prof. Alfred Acton.

The second meeting, held in April, was called to consider the possibilities of publishing an exhaustive index to the *Senses*, which had been prepared and submitted by Professor E. S. Price. A portion of the index was presented for examination at the meeting, the entries under the letter A being carefully gone over. It was decided that the index was so extensive that sufficient funds were not available for its publication. Furthermore, it was agreed that the Association reimburse Prof. Price for such expenses as he had incurred in the preparation of the Index.

The third meeting was held on May 13, 1915. Reports of the Treasurer and of the Editor of the NEW PHILOSOPHY were read and considered and it was agreed that they should be presented to the Annual Meeting. The Treasurer reported that pursuant to action taken by the Board in May, 1914, and after further consultation with the Academy Book Room, he had agreed to pay the Book Room 20 per cent. on net sales as agent for the Association. On motion the action was ratified. On motion it was also agreed that the Secretary be authorized to communicate with the London Swedenborg Society with a view to its becoming the British agent of the Swedenborg Scientific Association, and furthermore to inquire whether the Swedenborg Society would be willing to agree to purchase, at half the retail price, a sufficient number of copies

of proposed publications of the Swedenborg Scientific Association as to materially help to insure their publication. Finally it was agreed that it might be useful to inquire of the various publishers of Swedenborg's Scientific and Philosophical Works, whether they would be willing to offer such works as they have published at half price through the Swedenborg Scientific Association to its members, and this in view of the fact that this Association is endeavoring to disseminate a wider knowledge and appreciation of Swedenborg's science and philosophy.

5. The **Treasurer's Report** was presented as published on p. 94. On motion it was resolved that the report be duly accepted and filed when audited.

6. The Chair appointed Dr. F. A. Boericke as a Committee to Audit the Treasurer's Report.

7. As Chairman of the **Auditing Committee** of the previous year Dr. Boericke reported that the Treasurer's Report of May 13, 1914, had been duly audited and found correct.

8. On motion it was agreed to appoint a **Nominating Committee** consisting of two members. The Chair appointed Mr. John Pitcairn and Prof. Hite.

9. The report of the **Editor of the New Philosophy** was read. (See page 88.)

10. President Sewall delivered the **Annual Address** on "A Primer of Swedenborg's Science and Philosophy." (See page 78.) The plan for the preparation of such a Primer as that proposed in the address was discussed with much interest by Professors Acton, Hite, and Brown. Prof. Acton suggested that the pages of the **NEW PHILOSOPHY** would be open to publish introductions to any of Swedenborg's great doctrines which might be prepared and submitted, and that these might form a basis for the preparation of a Primer. The difficulties involved in the preparation of such a work were also dwelt upon, and Prof. Doering, speaking of the financial side of the question, thought it would be unwise for the Association to obligate itself to undertake any plan that would involve considerable expense.

11. On motion of Mr. John Pitcairn it was resolved that

the Association was in sympathy with the plan proposed by the President for the publication of a Primer of Swedenborg's Science and Philosophy, and that the matter be referred to the Board of Directors with power to take such action as they deemed proper.

12. The **Nominating Committee** reported the following nominees for election: *President*, Dr. Frank Sewall; *Directors*, Dr. F. A. Boericke, Prof. Alfred Acton, Prof. C. E. Doering, Mr. B. A. Whittemore, Mr. Horace P. Chandler, and Prof. Reginald W. Brown.

13. On motion, the Secretary was instructed to cast a ballot for the nominees, who were duly elected to hold office during the ensuing year.

14. On motion of Prof. Doering and after being duly seconded by Prof. Hite, it was unanimously

Resolved, That the Secretary of the Swedenborg Scientific Association be instructed to write to Prof. Price expressing the Association's deep appreciation of his long and faithful labors in translating and editing Swedenborg's work on the **Senses**, and stating further that the Association feels under great obligation to Prof. Price for his painstaking work in preparing a word index for this treatise. That our finances do not permit our using this index at the present time, in no way lessens our acknowledgment of indebtedness.

15. On motion the recommendation of the Editor of the **NEW PHILOSOPHY** to prepare a short index for the **SENSES** was considered.

Mr. Acton speaking of the financial arrangements that would have to be made made the three following suggestions for raising funds:

1. To apply to the Swedenborg Society, the Academy of the New Church and the Rotch Trustees and find out if they will be willing to subscribe for a number of copies of the **SENSES** at a reduced rate to be paid for in advance.

2. To ask those of our members who are able, to make special contributions.

3. To urge the members of the Association to endeavor to increase its membership.

16. On motion of Prof. Hite it was

Resolved, That this Association is in favor of the recommendation of the Editor of the *NEW PHILOSOPHY*, that a short index to the *SENSES* be prepared and published, and that the matter be placed in the hands of the Board of Directors.

17. It was suggested in connection with recommendations for works that it would be valuable to publish, through the pages of the *New Philosophy*, that the Association's series of fascicles might be continued, with the effort of first making accessible those treatises which have not yet been published.

18. Further discussion of the publishing uses of the Association and of the means of furthering them led to the general conclusion that it was very apparent from the sentiment of the Annual Meeting that it would seem important for the Association to enter into communication with other bodies of the Church with a view to their co-operation in the publication of translations of Swedenborg's Scientific and Philosophical Works prepared by the Association.

19. On motion the meeting adjourned at 5 P. M.

REGINALD W. BROWN,

Secretary.

OFFICERS OF THE ASSOCIATION.

At a meeting of the Board of Directors, held after the adjournment of the Annual Meeting, the following officers were elected :

Vice-President, Dr. Felix A. Boericke.

Secretary, Prof. Reginald W. Brown.

Treasurer, Prof. C. E. Doering.

Editor of the NEW PHILOSOPHY, Prof. Alfred Acton.

REGINALD W. BROWN,

Secretary.

PRESIDENT'S ADDRESS.

A PRIMER OF SWEDENBORG'S SCIENCE AND PHILOSOPHY.

BY FRANK SEWALL, A. M., D. D.

The situation regarding the Scientific and Philosophical Works of Swedenborg, at the present time, is an anomalous one. At the time of their production in the earlier half of the eighteenth century they were recognized by royalty, by the learned academies, and by distinguished scholars of Europe as of extraordinary value warranting their production in costly volumes under the patronage of princes. Again after the passing of a century, during which the theological works of the author had come so prominently to the front as to overshadow the public interest in the scientific works,—if not to prejudice it—a revival of interest in them among a few scholarly minds in England and liberal patrons in America organized as the Swedenborg Association, resulted in the translation and publication, in handsome uniform style, of a truly magnificent series of English volumes including most of the larger and more important of the scientific and philosophical writings of Emanuel Swedenborg. The assiduous care in translation, and the profound study devoted to the writing of the prefaces to the several works, show the self-sacrificing zeal which inspired the Newchurchmen of that time in their endeavor to put Swedenborg's system fairly before the world in its majestic completeness as embracing in its scope not the world of Spirit alone, but the world of nature and as bringing the two into harmonious unity. Luke-warm as was the New Church as a body in that day toward this great enterprise,—owing doubtless to the inability of more than a limited number of minds to form any intelligent conception of their value and contents, and also to the low estimate usually formed of that which we cannot understand—these works at that day did nevertheless call forth the admiration of some scientific men who were enabled to see in a dim way something of what these works meant for the future enlightenment of science, little as they could grasp the

full significance of the great system. The grandeur of the scheme, the sublime indications of a pathway to the perfect reconciliation of science with religion, the spiritualizing of nature, the animating even of matter, with the doctrine of the procession of the Infinite with the finite as logically evolved in the *Cosmogony*, and of the Divine with the human in the *Physiology* and *Psychology*, all this could not but appeal to the poet and the idealist, even where there was no real equipment for their scientific analysis and criticism; and the noble English setting given by the scholarly translators, Clissold, Strutt, and Wilkinson, was such as to stir up a certain literary admiration for the great series of the *PRINCIPIA*, the *ECONOMY*, the *ANIMAL KINGDOM*, the *PRINCIPLES OF CHEMISTRY* and the *MISCELLANEOUS OBSERVATIONS*, even when there was only a remote conception of the real scientific or philosophic worth of the works themselves. In this way many New-churchmen were aroused by the eloquence of Ralph Waldo Emerson into a kind of fictitious wonder at Swedenborg's greatness, and were almost persuaded to believe that the study of these works could really be profitable to those to whom Swedenborg had appeared only as a Revelator and Seer. While willing to borrow for the glory of the cause of the New Church and the honor of Swedenborg's name, whatever lustre the poetic endorsement of Emerson might give, still when it came to an actual valuation of Swedenborg's scientific works as an asset, either in religious or scientific education, there continued the same general indifference and even apathy, so that neither in our pulpits nor in our schools nor in our religious press was there any but the most casual and superficial reference to any of these great works with whose applause by others we were so well satisfied. The great achievement of that mid-century revival however was in placing these works before the world in the English language, and so in the libraries of institutions, making them available for such scholars as sincerely prized their contents. Among these appreciative minds was especially Dr. Rudolph L. Tafel, of America, and the Rev. Samuel Beswick, of England, who perhaps more than any others were instrumental in keeping

alive an interest, however dormant in the New Church body itself, in these writings. And this was done to a great extent by quoting extensively from the contemporary learned authorities not of the church, and showing either their open endorsements of Swedenborg, or the coincidences of their theories with his in some particulars. As a result of this kind of comparative study we have the series of articles in the *English Intellectual Repository* on Swedenborg's *Astronomical Theories* by Mr. Beswick, and at length the publication by Dr. Tafel, in 1867, of the very important work, "Swedenborg as a Philosopher and Man of Science," a book of nearly 350 pages, with an extensive list of authorities cited and an analytical index. The work with its extensive quotations from learned writers in many lands, and from leading scientific journals, shows in a fairly complete way how widely Swedenborg's science had become known, and how correctly it was interpreted in the last half of the nineteenth century.

It was the close of that century that witnessed the incorporation of what was to be a new and by far the most significant revival of interest in Swedenborg's science and philosophy which had yet appeared.

The real initiatory cause of this revival must be traced to the formation of the *SWEDENBORG SCIENTIFIC ASSOCIATION*, a body organized and holding its first meeting in the city of New York on May 28th, 1898. This Association was an offshoot of the *GENERAL CONVENTION*, which body had, by resolution, recommended the organization as a distinct body of the then existing class or section of the Conference of Ministers which had devoted its attention especially to the Scientific and Philosophical works. It was the thought of Convention that the ministers interested in these studies might associate with themselves laymen and those at home and abroad who, regardless of church or denominational attachments, would unite in the work of extending the publication and the study of these writings which even in the English edition were now getting to be out of print and difficult to obtain. The initial work undertaken was that of a new translation of the *PRINCIPIA* to be carried on by a joint

body of translators in England and America, and to be published by the SWEDENBORG SOCIETY of London. In the year 1902 the Association made its appeal to the CONVENTION and to the ACADEMY OF THE NEW CHURCH for funds to enable it to procure the transcription and publication of still unpublished manuscripts in Stockholm. With the prompt and generous assistance of these bodies, together with that of the SWEDENBORG SOCIETY of London, this work was undertaken, Mr. Alfred H. Stroh being placed in charge of the undertaking. Within a year the ROYAL SWEDISH ACADEMY OF SCIENCES had become sufficiently interested in the work of producing and preserving Swedenborg's works that it appointed a special commission in charge of it, composed of the eminent Swedish scientists, GUSTAV RETZIUS, SVANTE ARRHENIUS, LOVEN, NATHORST, and HENSCHEN. Under Mr. Stroh's general direction the ROYAL SWEDISH ACADEMY was thus brought into most cordial co-operation with the Church bodies in England and America, and the project soon took on the imposing dimensions of the publication of the entire works of EMANUEL SWEDENBORG in photolithograph copies of the Manuscripts and in the reproduction of the original editions. Of the significance of the work, Dr. MAX NEUBURGER, of Vienna, thus writes to the NEW FREE PRESS, of Vienna, on September 20, 1903, under the title, SWEDENBORG REDIVIVUS: "What a contribution the history of scientific thinking has to expect from this bringing to light of Swedenborg's works may be judged from the list of names of those engaged: Retzius, Loven, Henschel, Nathorst and Arrhenius. A mighty and inflaming spirit must indeed breathe forth from those dust-covered papers which went recently from the author's desk to the shelves of the Academy's Archives when investigators of such fame,—men who have hitherto only occupied themselves with searching out the secrets of nature,—came together to devote themselves for a time to the self-sacrificing labor of text study and criticism. There must dwell a substance in those pages far outreaching the limits of a single searcher's life time when the representatives of such various fields of labor, Anatomy, Physiology,

Pathology, Chemistry and Physics, Geology and Paleontology find him the object of a common enthusiastic devotion. . . . We believe that when the results of the labors of the Stockholm savants are known the name of Seer will be first applied to the great Swedish philosopher in its true meaning; for the great Swedenborg was indeed a Seer into all the realms of nature. The splendid task still awaits the competent pen that shall adequately present the anatomical and physiological system of the great Seer, at once in the framework of his own time and in the light of present knowledge."

In 1901 Dr. Neuberger had already delivered an address before the Convention of Naturalists and Physicians in Hamburg, which was published in the *Vienna Weekly*, 1901, No. 44. It treated of Swedenborg's discovery of the respiratory motion of the brain and of his being the first to assign to the cortex of the brain the psychical functions, and to locate the centers of the muscular activity in the cortex. The essay was translated into Swedish by Professor G. J. Santesson and referred to in the *BRITISH MEDICAL JOURNAL* of March, 1903. By this means the attention of the medical faculty was widely drawn to the two works, the *ANIMAL KINGDOM* and the work on the *BRAIN*. It was PROFESSOR RETZIUS who wrote to DR. NEUBURGER in January, 1903: "Your address has aroused my wonder, especially your proof that Swedenborg had really in sight the localization of the psychic functions,"—and it was on Professor Retzius' motion that the Swedish Academy appointed its committee to publish the MSS. of Swedenborg. [See *New Phil.*, Vol. VI., 1903, p. 151.]

Following this scientific revival came the civic and academic revival occasioned by the action of the Swedish Government in the year 1908 in having the remains of Swedenborg brought in state from England to Sweden and deposited with imposing academic and religious ceremony in a chapel of the Cathedral at Upsala, where, later, was placed a magnificent sarcophagus monument by order of the Swedish Parliament and at Government expense, the same being dedicated with solemn ceremony in the presence of King Gustav

and the royal family. In recognition of the important services rendered by Mr. Stroh in supervising and directing the great work of arranging, copying and reproducing the MSS. of Swedenborg in the Royal Academy, the King bestowed upon Mr. Stroh at this time a gold medal.

The general academic interest was further promoted by the delivery of an address by Professor Retzius before the European Congress of Anatomists in Heidelberg, 1904, in which Swedenborg's work on the BRAIN was discussed; and by addresses delivered by Mr. Stroh, both at the Philosophic Congress at Heidelberg and afterward at Bologna in which Swedenborg's relation to contemporary philosophy, especially to that of Des Cartes, was set forth. This European movement was now followed by the notable assembly in London in 1910 of the World's SWEDENBORG CONGRESS whose meetings occupied three days and nights in the King's Hall in London in the month of July, the Congress being held under the patronage of the King of Sweden, and the Swedish Ambassador being one of the chief officers of the Congress, and distinguished scholars from Stockholm and Upsala and specialists in science from England, America, Germany and other countries being among the attendants and contributors.

The revival of 1902 was productive of other fruits besides those of royal and academic honors. The series of the *New Philosophy* during the past fifteen years contain many original and thoughtful essays by members of our Association in which the aim has been not a history of past opinion nor a rehearsal of the testimony of living philosophers and scientists, but a research into the vital principles of Swedenborg's science as corrective of false conclusions and as constructive of a consistent universal system. It is perhaps not too much to claim that the papers produced by Messrs. Stroh, Iungerich, Swanton, Brown, Miss Beekman and others in these volumes constitute the most valuable contributions that have yet been made to the realization of Swedenborg's science as a thing of the living present and of the unlimited future. The additions to the available sources of such research in the translation and publication of the work on

The Five Senses, and in the production of a new and now for the first time complete edition of the treatise on the *Worship and Love of God*—is a service worthy to stand with the work of the Swedish scholars in its value to the serious investigator.

And all this progress of events brings us to what I ventured to call at the outset of my remarks—the anomalous situation at the present time regarding the Science and Philosophy of Swedenborg, which is in brief this,—that with all this progress in investigation, in reproduction, and in intelligent appreciation of the scientific and philosophical writings, the great body of Newchurchmen, or of those who should know Swedenborg best and appreciate him most highly of all, remains practically as ignorant of the scientific and philosophic works as if Swedenborg had begun not only his writing but also his studies and mental preparation with the *ADVERSARIA* or the *ARCANA CŒLESTIA*.

It is true that there have always been a few among the religious followers of Swedenborg who highly esteemed and endeavored to understand and put to use the scientific writings; but there are so few proportionately as to make all the more anomalous the existence of so large a majority who are not thus interested. So long as even the main body of our members, the students of our theological schools, the teachers in our Sunday Schools, and the large number of New Church young men and women who are studying in colleges and universities are practically ignorant even of the outlines of Swedenborg's physical, anatomical and psychological writings, it would seem to concern us to inquire as to the cause of this ignorance and as to a possible remedy for it.

In looking for the cause we may not indeed attribute the ignorance now, so much as formerly, to actual indifference and disesteem. A certain family pride, if nothing else, must now rouse in every follower of Swedenborg a certain fictitious if not genuine admiration of the man and the system that now after nearly a century and a half seems to be receiving the credit and the honor he deserves from his scientific compeers. There is doubtless with many of our young peo-

ple a feeling of regret that they are not better informed, and a wish that in some way they might, if only in a general way, grasp the distinctive structure of Swedenborg's science. An expression of this want has come even to our Association through an appeal of a number of young men formulated by the Principal of the New Church Theological School in Cambridge, asking that the Committee on Manuals of Instruction in our AMERICAN SUNDAY SCHOOL ASSOCIATION might consider the preparation of a very brief Introduction in Outline, or Primer of Swedenborg's Science and Philosophy; and this appeal the Sunday School Association has through its Standing Committee referred to our Association for consideration and action.

Accepting this as an encouraging indication that there is a real and growing interest in the church body itself in these writings, the next thing to concern us is how may we help to remove the prevailing ignorance. If its existence is no longer owing to indifference we may reasonably suppose it to be owing to some other and very practical reason; and this, I think, we shall find to be the vastness of the subject, the size of the task, and the difficulty of access to the works themselves. Even after fifteen years of preparation and waiting the PRINCIPIA itself, for reasons not necessary to mention here, is not available. The work on the BRAIN, even the two volumes published, can be had only at great expense. The ANIMAL KINGDOM is out of print. Fortunately the ECONOMY OF THE ANIMAL KINGDOM is now easily obtainable in the American edition, published in New York, as also are the works on the SOUL OR RATIONAL PSYCHOLOGY, the SUMMARY OF THE PRINCIPIA, GENERATION, and the newly published SENSES, and WORSHIP AND LOVE OF GOD. But every one who has attempted to grasp a great system knows that the attempt is almost futile if it mean only a grasp here and there, reaching at random only a feature here and there, but arriving at no survey of the system as a whole. In these busy days the time of the ordinary student or business man is too crowded with the multitude of other things for him to be able to take up in a systematic and thorough manner so large a subject

as that cosmical system of science and philosophy which Swedenborg himself avers to have been given him as a ground upon which to build up his theological system.

From these very conditions the problem seems to find its solution. If the works are inaccessible because too voluminous and expensive, then the utmost abbreviation and the lowest cost must be the remedy; and if the system is too vast to grasp by any but the professional scholar, then it must be simplified by reduction to its first principles, its A, B, C; and to its plainest, simplest form of presentation to the mind of ordinary intelligence. In a word the solution is to be found in a *PRIMER OF SWEDENBORG'S SCIENCE AND PHILOSOPHY*. And the question we may profitably discuss here is: What dimensions and what form or plan shall this Primer have, and how shall it be prepared.

As to the possibility of putting much in little I would offer as practical examples a little volume of 150 pages, embracing the entire history and outline of the Hindu philosophy from the Vedas to the present time, a period of 2,500 years; also a biography and outline of the entire philosophy of Plato in a little volume of 145 pages; and, which is perhaps the most wonderful of all, "The Critique of the Pure Reason by Emanuel Kant" reduced to a book of 90 pages, including a biography and an analytical Index! Of similar size with this and in the same series, entitled *PHILOSOPHIES ANCIENT AND MODERN*, published by Constable in London, is my own little treatise on *SWEDENBORG AND THE SAPIENTIA ANGELICA*, which, for brevity, would adapt itself to the requirements of a Primer, but which in reality covers the entire ground not only of the Science and Philosophy, but of the Theology as well, and so disqualifies it as a strictly scientific introduction. For illustration I might add in reference to this little book, in which brevity was made a foremost consideration to bring it into uniformity with others of this series, that the biographical notice of Swedenborg up to the time of his illumination occupies four pages: the description of the works on Cosmogony and Physics extending over the period 1721-1734, takes up seven pages—and that of the works of Phy-

siology and Psychology, 1734-1745, sixteen pages,—all in large pica type; that is, twenty-seven pages in all. If to this were added the list of the Scientific and Philosophical works, one page, two pages of Bibliography and Biography we would still not have exceeded 30 pages. The entire book in the Constable Series, embracing the notice of the Theological Writings and a Philosophical discussion of Swedenborg's entire system of the two Worlds, their Degrees, correspondence and influx, contains only 128 pages. As a popular introduction to a knowledge of Swedenborg in his twofold mission as scientist and theologian perhaps my little work would meet the immediate want in a measurably satisfactory manner. But the work is not scientific in its form or appeal, and would therefore fall short of a work for those engaged in the deeper research into Swedenborg's scientific system.

As for abbreviated statements, Swedenborg himself offers some striking examples in his SUMMARY OF THE PRINCIPIA, and, in particular, in his CORPUSCULAR PHILOSOPHY IN BRIEF. A chapter of the headlines or summaries of the contents of the several chapters and paragraphs of the Anatomical and Psychological works would at least afford a knowledge of the titles and contents of the several works, and so guide to the perusal of any one branch of them.

Such with a brief biographical notice would serve as a Primer or Pointer, somewhat as the Table of Contents at the opening of a book enables the seeker to know in a general way what the book is about.

Another plan would be to assign to certain of our own members, or to others who are thought competent, the several tasks of furnishing, for example, the biography; a history of the production of the works; and a statement in very condensed and elementary form of the plan, the leading principle, the method employed, in each of the great divisions, Physics, Anatomy, Physiology and Psychology; using possibly Swedenborg's own SUMMARY and CORPUSCULAR THEORY; with a clear statement of the Doctrine of Forms, of Order and of Degrees; and embracing, either at the beginning or at the close, the entire chapter in the *Principia* on

"The Means Conducive to a True Philosophy;" and including also the forecast given at the close of the work on THE SOUL, of a *Universal Mathesis* or mathematical philosophy of universals. With the exceptionally perfect logical method of the author, the task of presenting a methodical abridgement of the entire system is greatly facilitated.

Shall our Association undertake this task? If so upon what plan of construction, and to whom among our students shall be assigned the sections into which the work is divided?

I am conscious of the lameness of my address, in concluding it with only questions for which I have no solution to offer. But I hope that my deficiency will only prove the occasion for the greater efficiency of the Association as a whole, and that so this greatly needed work may, with no longer delay, be vigorously undertaken and successfully accomplished.

REPORT

BY THE

EDITOR OF "THE NEW PHILOSOPHY."

Since my last report there have been four issues of the NEW PHILOSOPHY. These, however, include the April issue for 1914 (which appeared in June of that year), but do not include the April issue for the present year which has not yet been published. The Editor regrets that owing to the press of other duties he has not been able to bring the Journal out on time.

The four issues referred to have comprised 115 pages plus 23 pages of the Transactions of the Association. Since four issues should normally comprise 128 pages of reading matter, exclusive of the Transactions, it will be seen that the journal lacks 13 pages of its due size, instead of exceeding that size by 16 pages as reported last year.

Excluding the Transactions of the Association, our four issues have been devoted entirely to Miss Lillian G. Beekman's PHYSIOLOGICAL PAPERS, and a translation of Swedenborg's work on THE FIBRE.

In regard to the Transactions these included 15 pages containing the Annual Address by the President of the Association on "The 'Only Begotten' in Swedenborg's Cosmology and Theology." A number of copies of this Address was reprinted for the private use of the President.

The installments of Miss Beekman's Papers have occupied nearly 58 pages and include No. 5 On the Office of Sensation, and No. 6 On the Cutaneous Envelope of the Spirit of Man. The subjects of the seventh, eighth and ninth Papers are, respectively, The Formation and Birth of the Infant; Man's Heredities; and Man as a Human Tabernacle answerable to the Divine Proceeding. These chapters, which will probably complete the work, will occupy about 96 pages. The published work will thus be a book of about 260 pages. We hope to have this ready for publication in the Fall of 1917. But before its publication provision should be made for the printing of an index to the work. This will cost about \$25.00.

The translation of *THE FIBRE* has occupied over 57 pages. This is just a little over one-half of the part on The Diseases of the Fibre which was commenced in the issue for April, 1914, and which is the concluding part of the whole work. In the Latin edition this work on *THE FIBRE* fills 250 pages, 216 (or sixth-seventh) of which have now been printed in English translation. This leaves 32 pages yet to appear, or about 40 pages in the translation. The complete work should therefore be in print by October of the present year.

As noted in our last report, the work on *THE FIBRE* is being reprinted in an edition of 1,500 copies,—the reprint now reaching page 144. Owing to the lack of time on the part of the translator to make the necessary revisions, no reprinting has been done during the past year. With the matter now in type the reprint would reach to page 304, while the completed work will occupy about 350 pages.

But before this work is issued in book form there should be added to it (1) An Index; (2) A Preface; and (3) about 60 or 70 pages of anatomical quotations, being the opening 57 paragraphs of the work.

In the MS. from which the Latin edition was prepared the

work begins with paragraph 58; nor have any traces of the preceding paragraphs been thus far discovered among Swedenborg's MSS. The work itself, however, shows that these missing paragraphs consisted entirely of quotations from the anatomists; and by a study of the text of the work, in which these quotations are frequently referred to and sometimes cited, the translator has reconstructed the missing portions of the work,—and this, as he hopes, with some degree of accuracy. The portion thus reconstructed should by all means be incorporated in the work when published in book form. Indeed, in part, this is absolutely necessary, since the quotations include 18 of Leuwenhoeck's histological plates which are specifically referred to in the text and without which some portions of the text are unintelligible; to say nothing of the fact that the author's inductions presume in many cases upon the reader being acquainted with the anatomical citations.

These additions, namely, Preface, Quotations, and Index, will increase the size of the work by about 100 pages, making a book of about 450 pages in all. And since it is quite apparent that the nature of these additions does not lend itself to publication in the *New Philosophy*, it will devolve upon the Association to provide means for the printing of these pages, at an expense of about \$150.00.

Turning now to the work on *THE SENSES*, it will be perhaps remembered that in our last report we noted that this work of 338 pages was printed in book form but awaited an index. Since then the translator, Prof. Price, has, at great expense of time and labor, prepared a copious word-index. This Index, however, is so thorough, and therefore so long, that to print it will entail an expense which the Directors were unable to undertake. If no means can be found for its present publication Professor Price's Index will be carefully preserved in the fire-proof vault of the Library of the Academy of the New Church until such time as it may be possible to publish it. The preparation of this Index has been an arduous task and a labor of love, and the Association owes to Prof. Price, both for this work and for his translation, its highest gratitude.

In the meantime, it devolves upon the Association to take steps for the publication of the work on *THE SENSES*. Nominally that work was published last year, but since it lacked an Index practically no steps were taken to push its sale. In consequence very few copies have been sold. And so it lies on our hands,—an edition of 500 copies of a work of nearly 400 pages representing so much tied up capital,—to say nothing of the fact that the valuable matters contained in this work are being withheld from the knowledge of the student.

Two courses suggest themselves:

1. To have a short Subject-index prepared. And
2. To push the sale of the work without an index.

The former seems to be the most advisable course, since, however unsatisfactory the proposed index may be as compared with Prof. Price's minute word-index, still a work like *THE SENSES*, which contains so many profound principles of philosophy,—often stated incidentally,—should not, in justice to the reader, appear without some sort of index. We would suggest, therefore, the preparation of a general index occupying about 30 pages. This would give the student at any rate some considerable guide to the valuable contents of the work. The cost of printing would be about \$35.00.

It may be noted that, in view of what has been reported above, there is some promise of our Association entering into a fuller realization of one of the uses for which it was established, namely, "the Publication and Distribution of the Scientific works of Emanuel Swedenborg." *THE SENSES*, with index, could be put on the market by the Fall of this year. *THE FIBRE* with the proposed additions should be ready by the Spring of 1916; and the *RETURN KINGDOM OF THE DIVINE PROCEEDING* by the Fall of 1917. And by these publications the Association would not only enter more fully into its uses, but would also provide for some return from the capital invested in these works whereby it could further prosecute those uses.

Summarizing the above recommendations they are that the Association provide:

1. For the printing during the Summer of an index to THE SENSES. Estimated cost, \$35.00.
2. For the printing of a Preface, Anatomical quotations and Index to THE FIBRE. Work on this to be commenced in the coming Summer. Estimated cost, \$150.00.
3. For the printing of an index to the RETURN KINGDOM. This can be left till our next meeting.

So much for the matter of publications. I turn now to the policy to be pursued in the conduct of the NEW PHILOSOPHY.

Since July, 1909, the policy of our Journal has been to devote itself mainly to the publication of Swedenborg's works. In April, 1912, after the completion of the SENSES, this policy was modified by the editor to the extent of undertaking the publication of a series of Physiological Papers by Miss Lillian G. Beekman. And we would here add, in appreciation of these Papers, that, judging from the written and oral expressions of members of the Association, Miss Beekman's work has been greatly valued and has contributed not a little to enlisting interest in the work of our Association.

Since 1812 the main contents of the NEW PHILOSOPHY have been Miss Beekman's Papers and the translation of the FIBRE. As we have already noted the latter work will be completed by October of the present year. It will therefore devolve upon the Association, and, in default of any action by that body, upon the editor, to decide either to alter the policy of the paper,—devoting it mainly to papers by various writers; or, to decide what shall be the next of Swedenborg's works to be translated and printed.

With regard to the first suggestion we note that during the six years of our editorship, with the exception of the Transactions, not half a dozen papers have been offered to us for publication. The second alternative, namely, to continue the publication of translations, seems to be the most desirable. The advertising pages of the NEW PHILOSOPHY show that a number of Swedenborg's works have been made accessible to the student during the past decade,—and this owing largely to the activities of our Association. But there are still other

important works which are not accessible, and which yet are necessary for the study and appreciation of Swedenborg's philosophy. It is among these that we must choose what is next to be taken up. We may mention the following:

SELECT SENTENCES,—a commentary enriched with much classical learning, on selected sentences from the philosopher Seneca. Its author was 21 years old. It has never appeared in Translation.

DÆDALUS HYPERBOREUS. A journal devoted to scientific and mechanical problems, edited and largely written by Swedenborg in Swedish and Latin. It consists of 154 pages, and has never been translated.

MISCELLANEOUS OBSERVATIONS on Scientific matters.

POSTHUMOUS TRACTS, comprising *The Way to a Knowledge of the Soul*; *Faith and Good Works*; *The Red Blood*; *The Animal Spirit*; *Sensation*; *The Origin and Propagation of the Soul*; *Action*; *the Soul*. These, and the preceding work, were published in English translation in 1847; but copies are now extremely scarce.

INTRODUCTION TO RATIONAL PSYCHOLOGY, or the *Doctrine of Correspondences and Representations*. A MS. of 9 pages folio.

THE HIEROGLYPHIC KEY. Published in translation in 1792 and again in 1847, but now almost unobtainable.

THE ANIMAL KINGDOM. This work also is now extremely rare; but to publish it would be a large undertaking for the **NEW PHILOSOPHY**, requiring a great many years.

I have presented at some length the needs of our Association, and as will be seen they are greater than the means at our disposal to carry them out. The Swedenborg Scientific Association is the only body in the world whose sole care it is to publish the philosophical works of Emanuel Swedenborg and to spread the study of those works and affection for them. But we need more support. We need the active co-operation of every one, man or woman, who is in sympathy with our purpose,—and even in the New Church, their number is not great. Then so much the more do we need the support of all. The work of the Association is done as a

labor of love, but the workers will be encouraged by increased evidence of the support of that work by all who are concerned in the spread of the principles enunciated by Swedenborg.

ALFRED ACTON, *Editor.*

TREASURER'S REPORT.

RECEIPTS.

Dues	\$177.30
Subscriptions	106.57
Sale of Publications	23.58

\$307.45

Balance, 5-13-15	260.35	\$567.80
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EXPENDITURES.

Rent of Hall Annual M't'g, 1914	\$11.25
Printing "Senses"	192.58
Printing 3 nos. New Philosophy (Apr., Jan., October), 1914	128.18
Reprinting President's Address	3.25
Advertisements, Messenger and Quarterly...	23.61
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\$367.21

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*Includes Royal Academy Publications	\$10.00
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C. E. DOERING,
Treasurer.

May 13, 1915.

PHYSIOLOGICAL PAPERS.

BY LILLIAN G. BEEKMAN.

VIII. THE THREE LINES OF HEREDITY AND THEIR CONDITION AT BIRTH.

Three lines of heredity unite in every human creature born into everlasting life.

THE FIRST LINE OF HEREDITY.

There is in him the heredity which is of God-Man, the Lord, the Father of creation. This is that highest and prime which is his esse. "The esse from which man originates is Divine" (*A. C.* 1894).

This is the supreme formative essence or God-Man with him and in him, in first and last. It is called the soul and is omnipresent throughout the human form or little universe (*S. D.* 4016). It is the Divine Universal of the mercy of the Lord; celestial good present with us. It creates, sustains, forms, the human embryo in the womb (*A. C.* 6115, 6482, 6491; *Ath. Cr.* 178). It is the substantial ground of the immortality of man, for it receives God-Man immediately and not by derivative influx (2 *E. A. K.* 350, 238, 310; *A. C.* 1894; *H. H.* 39).

Inseparable from this supreme essence is its consort form, the pure intellectory or simple cortex. This consort form is consubstantiate with the supreme essence; is less universal; is the very form of intellectual or celestial truth.

The two consorts together are called the internal man; which internal man is connately full and perfect, being of the Lord in man, and not of the man. The Lord has protected both the consorts of this internal man from injury during all the race-history.

This internal man is involved in the paternal seed, and it carries, gives, to every human babe created upon every earth, in any race, the fullness of God-Man the Lord, and the intellectual or celestial truth,—the science of all knowledges of the created universe.

This internal man is above the human plane, or the degree of the rudimentary, imperfect, rational principle (or organic prime) where thinking takes place, and where reside the "will and understanding" modifiable by the environment, and by racial experience and effort.

The soul or human spirituous fluid, the inmost human essence, is the universal ruler and formative substance of the human form. The Divine life and intelligence flow into the human form by it (2 *E. A. K.* 205, 219, 221, 241, 242).

It is so high above all other faculties that it is their truth, law, science, art (*Ibid.* 275-6).

In the cortical substance, or inmost in the supreme heaven, the soul (the simple or universal cortex) which partakes of Divine essence, has fixed her abode (*Fibre* 278).

On the soul and the substance of the fibre from it, see the *FIBRE* 285, *seq.*

Although this cortical substance be the principal agent in its animal kingdom, yet it is not the prime determinant, for it is itself determined by, and built and woven of, the purest fibres (2 *E. A. K.* 204).

The material of this purest fibre is given from the substance of the spirituous fluid or soul (*Ibid.* 296; *Fibre* 254).

This simplest fibre, the most simple, is above the cortical gland and its fibre, and is the supreme, most universal, and the one only continuous substance in the human form (*Fibre* 249, 250).

There is in each cortical gland . . . a most eminent organ of the pure intellect. Its form is celestial. It is born from the soul itself (*Soul* 124, 125, 128, 137).

This inmost intellect prescribes rules and laws to the operations of our mind. Its form is born of the essential determinations of the soul. (*Ibid.* 129, 130).

Thus with every man truth intellectual resides in his inmost parts, and is the Lord's property in him (*A. C.* 1904).

For this internal man, or the inmost and more interior organic principles of men and spirits, are not theirs but the Lord's. Hence these inmost and more interior things in man cannot be injured (*S. D.* 2477, 2487).

It is in this internal man, or the soul and the pure intellectory (above the thinking, rational, and pervertible organic principle) that the Lord is resident when forming the human creature,—not in that thinking and rational degree (*D. Wis.* iii; *Soul* 134).

For with everyone this internal man (the soul-essence and the pure intellectory, or Abram and Sarai) is above his rational, and is the habitation of the Lord (*A. C.* 2093).

Thus, even as babes in the womb, we inmostly possess in ourselves the most perfect knowledge of all natural things; for the truths of the pure intellect are the universal science of all sciences (2 E. A. K. 294; *Soul* 129, 131, 134).

"For the pure intellect comprehends simultaneously that which thought, or our rational mind, comprehends successively," slowly, part by part, and partially. "Celestial form embraces and as it were contemplates all following forms as if existing in itself, when it begins its operations" (*Soul* 132).

The property of this pure intellect is to know universal nature. (*Ibid.* 134).

This pure intellect, with its truth intellectual, resides in every man (*A. C.* 1904).

The communication or action of this pure intellect in the sphere below is by correspondence and harmony. When such are provided in the sphere below, then it is able to act upon that sphere. This is communication by correspondence (*Soul* 139).

For only when the mediate mind comes near to the pure intellect by means of universal ideas and a certain passive power, by its withdrawal from particular ideas and desires and loves which are purely natural, does it enter into unanimity with, and become partaker of, the life and joy of the pure intellectory (*Soul* 154). For the pure intellect cannot evolve itself in the sphere of the mediate or rational mind before it perceives therein states correspondent to itself (*Ibid.* 155).

For intellectual or celestial truths, or Sarai, which pertain to the inmost man, is barren, or as a childless mother, while as yet there is no rational into which it may flow (*A. C.* 1901).

But the soul itself,—the Abram, the supreme and very essence,—literally is inflowingly omnipresent in the whole and in every part of the human form; not in the mind alone, but in the body (*Soul* 174; *S. D.* 4016).

And, being everywhere present, it is able to act immediately on every plane and viscus, to provide for all, and to adjoin itself to matters in which there is scarcely any correspondence at all (which is meant by Abram being able to go in unto a handmaiden) and form thus a first development of a rudimentary rational (*A. C.* 1904, 1909).

We term this internal man The heredity from the Lord alone. It is indeed conveyed in the paternal seed. This supreme internal essence and this simple cortex, in unspoiled and perfectly developed gift from the All-Father, are involved in every individua of that seed; and in every particle of the rudimentary lower plane of the spirit or mind carrying the

inclination and faculties of the racial accomplishments of the paternal line. By consequence it is involved also in every rudimentary grey cell of the embryonic brain. "No simple cortex, no cortical gland, no soul, no seed."

There is, moreover, nothing for which the Lord's love created the race, so much as for the actual inheritance of and entrance upon this supreme and perfectly full human heredity of the internal man given connately in every creature born and in every least unit of human seed.

Yet, since nothing man can do can mar or alter this internal man; since in the lower, modifiable plane of his mind he cannot evolve it, but it waits to evolve him; since from conception to the end of eternity it is the Lord's and is the ground of the All-Father omnipresent and universally acting within; and since it is actually not only man's incoming life but is what most of all holds him together as a coherent human form recipient of life; therefore we prefer to term it the line of human heredity from the Lord, God-Man, the All-Father.

It is thus that we distinguish it from the plane below or more exterior (also conveyed in the paternal seed) which transmits the racial heredity in its accomplishments, perversions, recoveries,—a plane in which God, through the soul, concurs and empowers, but in which the as-of-itself life of man, developing from rudimentary beginning in each man, is given dominant activity.

THE SECOND LINE OF HEREDITY.

There is in the finite human creature a mediate organic principle which is rudimentary at birth (*A. C.* 1893). This is the plane where we think, and it is called the rational, or the organic prime.

It is in this mediate organic faculty that incompleteness, specialization, individualization exist. It is left incomplete at birth, that men may complete it each for himself.

Moreover, one may say that in the internal man which is above this mediate man the universal Divine of God-Man, the Lord, and celestial truth in its universal fullness of form, are substantively given alike to every man; while this mediate

plane gives in each individual the bounding or finiting predicate of that substantive fullness. In the internal all is given from the All-Father; but the rudimentary mediate man, in its growth, change, specialization, is the reciprocant which becomes the definite measure of that man's personal comprehension, apprehension, of that inner human fullness. So much of the substantive celestial fullness of the simple cortex is appropriated to the man as can find in the mediate plane harmonies and correspondences for itself in breadth, in idea-concept, in qualities of loves and states.

This mediate plane in rudimentary form is given in the paternal seed, to be completed more or less in the experiences and efforts of the as-of-itself life of the individual. In this plane of the seed is expressed and handed down the racial heredity,—product of the as-of-itself effort of the spiritual form and substances coacting upon and with environmental experiences, along the male line. Therefore particularly may we call this degree of the mind or spirit, *our* mind. "The proprium of all that is in man is of this mind" (*Soul* 310). Herein we can leave good undone, and can do evil. It is therefore this plane which carries the heredity of the racial perversion.

This covers the ground of the statement that a "unit of human seed interiorly perceived presents a least brain-form of three degrees, the lowermost of which alone is perverted.

It is this heredity-perversion, existing in the transmitted seed as an actual malformation and disorderly retorsion of the units of spiritual substance, which constitutes that "heredity evil derived from the father which is more interior (than that from the mother) and remains to eternity" (*A. C.* 1573, 1414).

Fortunate indeed then are we that this plane, as transmitted in the male seed, is always incomplete and rudimentary.

Again, this plane of the thinking mind or spirit which is thus rudimentarily transmitted in the seed, is the same in degree as the plane of the formative substances or souls of all the species of nobler animals.

The purest fluid of animals, their soul, derives its origin from the second aura and belongs to the same degree as the degree of our mind (2 *E. A. K.* 339, 341).

For our understanding, thinking, willing mind is correlated with and reciprocal to the second aura (*Ibid.* 289, *fin.*; *Soul* 16, 20, 21).

Thus "the inmost soul of brutes is in the sphere of our intellectual mind" (*S. D.* 2770).

This study of the internal man in its double form above the thinking or rational, and the rational in perverted order or rudimentary form, as being both carried in the seed, covers the ground of the statement that every man has from conception three degrees of life, "a lowest in common with beasts, and two higher that are not in common with them" (*A. E.* 1224; *H. H.* 39); and that the lower alone is in perverted order (*D. Wis.* iii, 4, *D. L. W.* 432).

This mediate degree of the spirit or mind given rudimentarily in the seed is not to be considered as some continuous tissue; but as composed of an orderly arrangement of myriads of myriads of units,—as many as afterwards are re-presented as the cortical glands or cells composing the grey matter of the cerebro-spinal system (*D. Wis.* v, iii, 4). For there are as many portions of the mind as there are cortical and grey substances in the cerebro-spinal system (*D. Wis.* v; 2 *E. A. K.* 307).

Its rudimentariness at birth consists therefore not in part of the units of which it is composed being missing, but in the fact that, although all the units are present, they are still as it were embryonic or infantile, or like child-forms, as compared with the possible fullness and power of the grown adult to which in the course of life they may attain.

For in embryos and young infants . . . the cortical substances of the cerebrum and the cineritious substances of the corpora striata are not entirely formed, but are growing up by education at once to their solidity, consistency, and to their degrees or series (2 *E. A. K.* 194).

Moreover this plane of the spirit or mind is *actually* mediate or central. For as far as to this plane there is an ascent from

the outer world and the body. And as far as to this plane there is a descent from the Lord and the soul (*Ibid*, 287, 296, 323; *Soul* 306, 305; *S. D.* 899; *A. E.* 726 v; *T. C. R.* 8).

This plane is also the plane of isomerism of interior structure; see the Fourth Paper (*New Philosophy*, July, 1913, p. 89 *seq.*, Oct., p. 191 *seq.*). For it is this plane pre-eminently, of which it is said:

The interiors of all things of the human mind, and with them the interiors of all things of the spirit, are capable of being turned either downwards or upwards. They are turned downwards when man loves himself above all things, and they are turned upwards when man loves the Lord above all things. This is an actual turning (*A. E.* 1163).

All fibres and vessels of an infernal human form are inverted (*D. P.* 296. See also 279 showing that the memory is the permanency of these turnings).

The fibrils weaving the substances, and determining the interior currents and inclinations of the form of a cortical gland,—the common organ of sense-images, imaginative thought,—lie in "vortex-like circlings inwards and outwards after the fashion of perpetual and recurring helices wonderfully bound together into forms recipient of life. (That is, they are woven as a garment or basket might be woven; and are combined to bring into forthstanding existence the vessels recipient of life.) In the good these spirals as it were turn forwards. In the evil they turn backwards (*D. P.* 319).

It is as if we should say each gland is a minute turbine wheel. Exteriorly both would have the same shape,—could not be distinguished. But one turbine would have the interior arrangement of its vanes and partitions slanting say, from right to left; and the other from left to right. Then when a stream was let into the centre of the two wheels, the one wheel would revolve or turn the inner stream clockwise, and the other counter-clockwise.

In like fashion is it with the formation of the cortical gland of the cerebrum as it grows. The fibres contexturing them, and all the lines of infilling, in the glands of one man will turn in one direction; in the glands of his brother in the reverse direction.

This is the plane where man works together with the Lord. This is the plane which, once formed and fixed and infilled,

cannot be changed to all eternity. As this tree falls it ever lies.

The gyration from right to left turns down to the body; the gyration from left to right turns up to the Lord and heaven (*D. L. W.* 270).

As this plane is mediate between the plane of the natural sensory and body (the external man) and the simple cortex and soul (the internal man), it is evident that only when the gyre of a growing fibre is from left to right,—that is, is laid under the influence, the dominant heat of love to the Lord,—can the circuit of the Divine Proceeding of the soul, which has descended from firsts to ultimates by composites of blood and body, return from ultimates to firsts, and, arising from the red blood and body, with the world and its senses, through the mediation of the upward circling spires of this middle organic plane, can ascend to the internal man, (the simple cortex and soul); and thus complete its mighty circuit of proceeding and return to the organic instrumentality of this proprial plane of the as-of-itself action and growth of the mind.

As this is the highest plane of the mind or spiritual structure which is capable of interior isomeric formation, here and hence is the stream of hereditary racial perversion; and it is carried from one generation to another by the transmission, in the seed of that rudiment, of the specific isomeric twist which characterizes the plane of the individual paternal mind.

This mediate plane of the spirit or mind is the lowest or most external conveyed in the human seed,—unless indeed, we regard as applying here the law that in the organic spherical units of the mind, the exterior of a more interior and elevated degree of form coincides with, *is*, the interior of the proximately lower and exterior (*Soul* 118, 153, 170): which is quite possible, since the whole cortical glandule is woven of lines of constituent units disposed in some degree of spiral form; and a simple spiral, or spiral of a lower degree of form, is easily bent and adapted to pass over into the perpetuo-spiral or vortical, which is the next higher degree of active form (*Soul* 88). In this case the exterior of the rudimentary units of the thinking and rational mind would coincide with, or be, the rudimentary interior of the natural mind.

From this point of view the three classes of statements in the Writings concerning the natural mind and natural memory as an organic principle, would fall into order, and be seen as being all three true, namely: That all human creatures have a natural exterior organic principle, ground of the natural memory; that those dying as infants do not have this natural-memory ground, while with those who live to adult life, such a ground is formed and grows. That the natural is from the mother. That man forms (e-forms) the natural and corporeal soul for himself during life in the world, and that the natural mind or organic grows out from the rational organic, like a sort of ultimate excrescence,—almost as hairs grow out from the corporeal exteriors (*A. C.* 3301).

All these statements are in the Writings. And in connection with them, consider that animals actually have the substance and form of the memory and imagination proper to their racial type and history at birth;—but man not. See *THE SOUL* 109.

We may however regard the rational or mediate degree as the lowest given in the seed,—save so far as the exterior thereof is the interior and start from which the natural mind organic, will put out, grow out, be e-formed; for the statement is explicit that those who die infants do not possess the latter principle (*H. H.* 345).

One thing more is carried in the father's seed, namely, that delicate peripheral delineation of a face which is unconnected by fibres with the rudimentary brain carried in the seed; but which stands as it were over against it, with a vacuous-like space between (*D. L. W.* 432; *D. Wis.* iii, 3). This possibly goes in as part of that peripheral system constructed by the internal man immediately, and of which we shall treat in the following section of the present paper.

This then,—this mediate degree, ultimate in the seed, rudimentary, expressing the racial as-of-itself attainment of will and understanding,—is the second line of heredity,—that from the racial line of the finite paternal parent; and this is woven with the two other lines,—(a) with that from the Lord alone, and (b) with that from the maternal stock and personality,—

in the constitution of every human form which consists as a lasting and individual form to eternity.

THE THIRD LINE OF HEREDITY.

In the simplest constitution of a human creature viewed as an immortal individual form, three strands of heredity meet. Each performs a distinct office and becomes a different gift upon the human creature.

The immortality of man, and all human potency, are conferred by the internal man,—the heredity from the Lord alone. For by this is given universally within the human form, the immediate inrooting of God-Man and the *esse* of Jehovah. In it also is bestowed the celestial whole of good and truth.

In the second line of heredity, that from the finite father carrying that father's proprium, is given the individualization of that human creature. In this the finite father is active and the Lord concurring. This individualization, carried in the rudimentary exterior of the seed, expresses the features of the racial actualization, on that planet, of the fullness of the internal from the Lord, as specialized in the paternal hereditary line.

The line of heredity from God-Man, the Lord alone, gives immortality and celestial fullness of intellectual truth. The line of heredity from the finite father in his acting together with the Lord, gives the rudiment of rational-spiritual individualization as achieved by the race, and by the individual father's stock. And these two lines of heredity involved in the paternal seed, give to the human spirit or mind its immortality and individualization.

To that individualization of the spirit carried in the hereditary line of the finite father, the third line of heredity, that from the mother,—carried in the *quasi* material fixing and infilling substances derived from her blood, and animal spirit,—gives organic permanence and extension; and also effective relation with more ultimate planes of the series of substances, forms, and forces, of the universe.

That permanence can be given to the individualization of human form woven of spiritual substances, only by their in-

filling, even in their least detail, by the effluvial particles, *quasi* material, given off from the earths and the kingdoms of nature, see the Sixth Paper (*New Philosophy*, January, 1915, p. 1 *seq.*, p. 12 *seq.*).

Moreover, it is this infilling and fixing substance taken for the newly forming creature from the maternal stores alone, which gives to the spirit or mind of man its organic extension. For man's spirit or mind is organic; and is extended. And those who establish a principle of belief that man's spirit is not organic and extended contract thereby phantasies and persuasions (*S. D.* 3470-1; *A. C.* 444). And the law is given that the organic extension possessed by the mind or spirit is due to the infilling matters.

It is due to this same law that only so far as the degrees of the human form in its *per se* fullness are infilled and fixed by *quasi* material or effluvial spheres, do they become organic and as it were pass into the man to be his as effective faculties.

It is in reference to this necessity that it is said that the Divine willed to create individual forms receptive of the life of the Lord; and that the Divine was not able to create such forms directly but was able to create them from substances and matters already brought forth (*D. L. W.* 4-5, 170; *T. C. R.* 176). Therefore from the ultimates which it had already produced, the Divine adjoined to itself correspondential substances and matters and of these created forms which would be individual and in which life would be. "Therefore from the ultimates which it has created, it adjoins to itself things suitable whereby man may be in whom it can live" (*A. E.* 1223).

Hence human minds or spirits are forms organized both of spiritual substance and of matters (*T. C. R.* 470; *Intercourse Soul and Body* 12).

It must be remembered that these ultimate and helpmeet fixing particles which are given as the line of maternal heredity are not an inconsiderable matter; for quantity, for variety, for degree, they are as it were a universe in themselves (*S. D.* 976).

Moreover, "the whole macrocosm ministers. For whether

the elements that will serve for the connection of forms be floating and scattered in the air or in the ether, or whether they be fixed in the three kingdoms of the earth, they are present in the ovum in such co-ordination that they are ready for supply at the slightest intimation of a want" (2 *E. A. K.* 237).

Moreover, the mother's blood and animal spirit are filled with fixing and infilling particles drawn from such correspondential sources as the mother in her own spiritual life and reactions procures to her ova and her blood. Thus they will be different for every individual woman,—in addition to their tremendous isomeric difference in the woman who is and the woman who is not spiritual. In a spiritual man the blood nourishes itself with things correspondential to spiritual things; and in a non-spiritual man the blood nourishes itself with things correspondent to the non-spiritual (*D. Wis.* x, 6; *D. L. W.* 420). For the quality and the power of all effluvial and nutrient substances is always the same as that of the individual bodies or forms from which they proceed (*T. C. R.* 470, 499; *S. D.* 3817; *D. L. W.* 292-3).

Thus the red blood of a regenerating man is altogether different as to its nutrient and effluvial particles from the blood of a man who is not regenerating,—although it appears the same. So that in an evil man every fibre and every vessel and every substance formed is "in inverted order" (*D. P.* 296).

And the connective or nutritive particles of the animal spirit also are kept by the Lord in absolute correspondence with the particular marriage of good and truth, or of evil and falsity, existent in that man, in that mind (*D. L. W.* 420, 423).

Nor are the infilling and fixing or helpmeet particles which the maternal line of heredity provides as its share, derived from cosmic substances alone. For there are four sources of ailments with which the blood must be furnished.

Not only are there (a) terrestrial, (b) atmospheric, and (c) subtile etherial aliments; but in addition, (d) "from every pore, vesicle and gland" of every tissue and organ of every degree in the whole organism, the vitalized secretion, product, outgo, must be poured out into the blood (1 *E. A. K.* 199).

Thus the blood of the mother gives for the child's use not

only the helpmeet particles which she has attracted and imbibed from the cosmic sources correspondential to her own state and habit, but also the vital output from every organic unit of herself in her whole microcosmic form.

For fuller consideration of Swedenborg's statement of the laws of spiritual association, and of the tremendous practical and living differences of the substances and matters carried by the blood,—differences of power and sanction like that of the solid mount of blessing and of cursing,—see the Fourth Paper, on the connection between the qualities of the blood and the cupidities of the animus, and on certain practical laws governing self-modification of quality and form of the growing organic structure of the mind or spirit (*New Philosophy*, July, 1913, p. 112 *seq.*, and October, 1913, 191, *seq.*).

THE FORMATION OF THE RED BLOOD AND THE BODY.

As stated in the last paper, this third thread of heredity, the maternal thread, that of the fixing and helpmeet substances, cannot be drawn back from ultimates of the embryonic red blood and body, to enter and interknit with the mediate form of the spirit or mind pertaining to the as-of-itself life,—the lowest given in the paternal seed,—until the embryonic red-blood body is at least fairly formed.

A mere statement of the conditions and time when this spiritual-substance-form belonging to the finite paternal heredity can first receive in its inmost bosom those helpmeet maternal substances which are able to render it a fixed, permanent, and self-reacting form in the spiritual world and in the natural, focuses interest keenly upon the period and the activities involved in the creation of the babe's red blood and body.

To begin with: The whole body, the entire corporeal and peripheral-sensual of the structure of the babe, is constructed by an active project (eject) of the internal man, the planes of the Lord-alone-heredity in the seed. Thus the corporeal and peripheral-sensual constitution of the babe with its ultimate blood are the peculiar correspondents of the celestial or simple cortex, and of that supreme human essence, the innermost soul, which lives the life of God immediately.

Moreover, that active project of the internal man, of the supreme soul itself, which first instructs the corporeal and peripheral-sensual system, continues always in them immediately to conserve, sustain, ordinate, as God the Lord's immediacy of presence and providence in ultimates.

In this first creative formation of a body, the second line of heredity, the lowermost racial, rudimentary in the paternal seed, is not an active factor; it has no part in it except so far as that exquisite delineation of a face like a fairy mask of feature which is part of the paternal seed is a portion of the peripheral system.

The statements are direct, that the wonders of the embryonic formation are of the Divine Providence; that it is the Lord Himself who forms man in the womb; that it is the Divine Universal which forms the embryo; and that in the creative formation of the babe the Lord acts in, is operatively resident in, the two higher degrees of life given in the seed, but not in the lowest where,—in men of our earth,—the perversion exists.

When the pure form of the human seed comes to an ovum that has already matured itself and, by extrusion of the major part of its own nucleus, has put away that self-centre and ordinating element hitherto part of its organism,—being derived by direct division from the seed of the woman's father,—the seed passes through the peripheries of the ovum and travels towards its centre to enter into and unite with its pro-nucleus,—the minute nuclear fragment that is left in the ovum after the extrusion above referred to.

During this approach of the seed, the pro-nuclear fragment rises up to meet it. After its entrance and union it actually takes the place, and more than takes the place, of that first nucleus from the woman's father which the ovum put away from itself at its maturation.

When the seed is become thus resident in the heart of the ovum, the first operation of the internal essence or soul involved in that seed, is to widen the scope of its animatory operation. It projects the line of its flow, enlarging its out-

reach by determining ordination of and in the primal aura, until that flow has reached the proportions of a great vortex which includes in its dominating, governing circle not only the ovum itself but the entire organism, the complete microcosmic structure, of the mother as well (confer *Generation* 256).

In birds and other creatures whose complete world of maternal substance is given and summed already within the envelope of the ovum or egg which is thus a complete little universe for the seed, this first step, this first enlarging circulation, is confined to the limits of that little universal world of the egg. But it is otherwise with mammals. With them a beginning only is in the ovum. The rest is taken out of the maternal blood (1 *E. A. K.* 344; *Generation* 324).

In the human being, that maternal gift which was collated in the small ovum is of particles which are pure and innocent, as beseems an organic structure in itself the correspondent and earthly foothold reactant to the most intimate societies of the celestial heavens. But the rest of the maternal gift derived from the mother's womb and blood are of substances more or less contaminate, according to the woman's own states and loves of animus and mind, as well as according to the indefinitely great variation of quality and potency in each individual woman.

It is this individual living organism of the whole woman, a microcosm of itself, that the projecting circuit of the flow of the human essence, the seed, involves in its greatening vortex.

Thus the soul of the new creature about to be, takes possession in its primal flowing determination, not alone of the ovum but of the whole woman, to be a sort of full ministrant universe to the seed (*Generation* 298, 299, 307, 334 *fin.*).

The first thing, the first obvious thing, accomplished by this enlarged vortex of the circle of the soul in the seed, is a repeated division and growth of its cell; until there is produced a tissue,—indeed a double tissue,—of vesicles or cells simulating something like a double spherical envelope more or less complete with white living fluid between, within, and around, coming and going.

These vesicles or cells are its workshops. Their obvious structure masks and hides the living substances *per se*, and serves its coming and going, its weaving and working. Each vesicle is as it were a universe. Through and through them comes and goes by hidden, accurately determined ways, the weaving, flowing soul, wherein is the Lord Himself immanently present and immediately operative.

Here in the ovum, in these tissues of multiplying, dividing, growing, moving cells, partly fixed, partly amœboid or travelling, the body begins to shape; and first of all, the shaping is all done by determinations of the vortex (*Fibre* 124).

THE FORMATIVE VORTICES.

Two vortices, in fact, determine for the weaving of the body.

FIRST. From that portion of the simple or celestial cortex belonging to the gray cells of the cerebellum, there goes forth a vortex, a sort of projection, a widening eject, of the supreme essence involved therein; and which, by empty spires of flow around and without the mediate plane of the seed, as it were flings itself down and out; and, projecting itself, represents to itself in its flowing tides, a body, a corporeal ultimate, a peripheral form, delineated in determinations of the primal aura; and, as it flows, so, from its own substance, it as it were enfibres itself over part of the course of its flow.

This peripheral form thus produced consists of distinct units called corporeal unities.

As each rudimentary form of the myriad gray cells of the brain possesses a still simpler cortex involved individually in itself, we may, for the moment, consider them in the plural as simple or celestial cortices. Thus, from the celestial cortices involved in the rudimentary units which will become the gray cells of the cerebellum, proceeds as it were a distinct stream and line of vortex-flow; so that the vortex-stream going out from the simple cortex of the cerebellum is a complex of all these streams.

Now each stream-thread individually ultimates itself in the weaving of one such corporeal unity of the peripheral form. That is why it can be said that the human corporeal is the

correspondent peculiarly of the celestial itself. It is so. It is literally its offspring and projection. And later, when it comes into infilled visibility and tangibility, it will present itself as a glandular nervous form not unlike that of the cortical gland or gray cell of the brain (*Fibre* 183, 163); and it will then form one unit of that great sympathetic and peripheral nervous system which weaves the nervous coats of arteries and veins, and which is also scattered throughout the corporeal tissues as if their very dough was kneaded in with gray glandular nervous tissue. It also enters into the sensory peripheral system, the outmost nervous receiving-units of the sense-organs of the body; but this latter belongs to the subject of the vortex produced from the simple or celestial cortex peculiar to the cerebrum,—to be noted later.

To return to the vortex expressly produced from the simple cortex pertaining to the cerebellum. From each unit of the simple or celestial cortex above,—a component unit as it were of the internal or celestial man,—there proceeds a spiraling vortex-flow and thread, which, in its end, delineates one such corporeal unity; one least form, resembling a true nervous cortical gland; emulous thereof; produced to be like another self and a very projection on the ultimate corporeal plane.

In this peripheral form thus first delineated by the vortex produced from the simple cortex of the cerebellum, and vortex-threads turn; and from each corporeal unity there goes back the invisible flash of the corporeal fibres, delineating by their wider circling currents the empty shadow and outline of the nervous coat of bloodvessels yet to be (*Fibre* 182, 183, 163; *Periosteum* 4). Thus flinging back to the mediate rudiments of the cortical glands, the returning vortex-threads produced from the unities of what may be called the corporeal cortex, enfold themselves as they run; and the passage woven by these spiraling return-fibres carries subtlest effluvial particles, able to mate with the vortex of the soul-essence itself in producing the composite massings of the animal spirit in its lymph that forms the middle human essence; and this, in order that the primal delineations of downgoing fibres may be infilled after their own degree; and that from the animal spirit, uniting itself

in turn with myriad grosser effluvial particles and inert connectives or "salts," the first red blood corpuscles may be delineated; and that the palpitant tubular heart may have its own blood to contract on, and to determine in its ways. Then, by the animate lymph and the red blood as by a living tide of liquid form, the first corporeal nervous sketch of body and bloodvessels begins to receive something of consistence, reaction; and thus to emerge from the invisible and intangible to the verge of the visible and tangible.

SECOND. There is another vortex that goes out from the internal, namely, from the supreme essence and the simple celestial cortex involved in the cortical glands of the cerebrum. The stream of this vortex also determines to ultimates, enfibres its flow, and weaves new ultimate composite forms, and from these ultimates, reflexes back again to the brain. Part of the stream of this second or twin vortex, at once and in the cortical glands themselves, adjoins itself to and mates with the effluvial substances of the maternal store brought from ultimates by the reflexing corporeal nervous fibres belonging to the cerebellum-ultimates; and thus forms itself into animal spirit,—a vital fluid accommodated to activities on a lower plane,—by being bodied and compounded by effluvial spheres belonging to that lower plane.

The stream of animal spirit again, in its turn, derives itself still lower; and under the form of the most composite blood,—the red blood,—acts as the soul and the Divine Procedant, operating in ultimates. From this its ultimation as red blood its stream reflexes back upon the gray cells of the brain wherein are housed the organic rudiments of the finiting, thinking, proprial, mediate, mind or spirit, with its will and understanding.

Part of this second vortex-stream from the internal man of the cerebrum, swinging to peripheries then delineates in its gyre the sheaths of the skeletal muscles (*Periosteum* 5, 8),—those muscles, namely, that move limbs and trunk at the command of the cerebrum or of the voluntary and intellectual brain; for the cerebrum is the ground of all the voluntary de-

terminations; and in the cerebrum alone does free-will reside (*A. C.* 4325).

A third part of the vortex-stream from the celestial cortex of the cerebrum,—and, to our present topic, the most wonderful of all,—swings outwards to peripheries and delineates the cortical unities,—gray ganglia-cells formed after the likeness of the corporeal unities woven by the vortex from the simple cortex of the cerebellum; corporeal nervous cells which are in aspect like to the cortical nervous cells in the brain. They constitute the peripheral sensory system, and are part of the peripheral or ultimate nervous receiving membranes of all the sense-organs. Thus all over the circumference of the body do they exist, and are part and parcel,—indeed, the vital, living part,—of all the sense-organs of the body. From these corporeal nervous unities, these peripheral nervous ganglia and systems, are produced fibres which reflex back; nervous corporeal fibres bearing like relations, in the vortex produced from the simple cortex of the cerebrum, to the sympathetic nervous corporeal fibres in the cerebellum-vortex which weave the nervous coats of the arteries and veins.

But this corporeal nervous fibre reflexing back from the peripheral sensory unities of the body, does not weave blood-vessel-coats, nor determine back to both cerebrum and cerebellum as do the blood vessels. From its peripheral sensory ganglia it determines back upon the cerebrum only. There its fibrils unfold and, like fibrous fingers, touch and clasp and ring about certain groups of the gray cells of the cerebrum.

These nervous returns or corporeal fibres belonging to the cerebrum vortex are what we now term afferent nervous fibres and sensory nerves.

The ultimate or peripheral nervous receiving tissue of the sense-organs of the body are thus under governance of the soul alone, of the very internal, and the supreme essence of life by which the Lord Himself determines immediately into these ultimates, and there governs and reigns.

Moreover, by means of the return fibres reflexing from these ultimate unities back again to the cerebrum and there entering into relations with the exterior of the cortical glands of the

cerebrum, that stream of life from the Lord alone, flowing immediately from firsts to ultimates (omitting the intermediate organism), now flows back in full afflux stream from ultimates to the intermediate; and there it surrounds and compasses about the cortical glands and acts upon them governingly from without.

Thus the influx of life, the very stream of the inmost essence, the Lord present and acting in man, comes to the rudimentary gray cells from two directions, acts upon them in two ways:—From within through the full internal man involved in each; and from without, through the return-flow of the supreme vortex-stream which has been determined to ultimates (1 *Ad.* 655, 666; *S. D.* 2950; *A. C.* 1902).

Thus the Lord Himself has provided the organic ways by which He can act immediately upon the intermediate rudimentary human organism, and this in firsts and in lasts, in inmosts and in ultimates, simultaneously, to form, reform, order. For the Lord is immediately in firsts and in ultimates simultaneously; and His operation is from primes and ultimates together (*D. P.* 220 I). Hence it is, that, only in this world, in the fullness of a red-blood body can reformation take place (*D. P.* 277a).

Moreover, thus also God holds all things together (*Canons*, God viii, 12, note); and His rulership in the body is sole and immediate. So that actions and all corporeal things are exempted from the particular influx of spirits and angels and are ruled by the Lord Himself through the general influx of His own Divine life (*A. C.* 5990) acting together with the state of the atmospheres and many things pertaining to the earths, or the type and quality of the ultimate substances of the earths in which they dwell (*S. D.* 1670).

Thus the twin vortices, carrying the inmost life, the very esse of Jehovah, determined from the simple cortices of the cerebrum and cerebellum, mingle their streams,—distinct, yet one and consort,—to weave the human corporeal and sensual; adoining to themselves for this use, such substances as the woman has to give; and conditioned in their actuality of power by the individual potencies of quality, force and correspond-

ence of those substances in that individual woman. And always the quality of the substances from the mother's store to which the soul, the inmost essence adjoins and groups itself to frame itself into bloods accommodated to more low degrees, counts greatly; and conditions and finites and qualifies the composite. So that the latter is almost to be thought of as if it were a marriage union in which a husband of great power and wisdom should be finited and limited as to his personal consciousness, by the quality and potency of the consort woman. For when the soul composites itself with matters, that it may accommodate itself to lower planes, the quality of the matters not only conditions its action and dictates a momentary predicate to its universal substantive esse (*Red Blood*, in *Posthumous Tracts*, v, xii) but, for that period, the soul loses full consciousness of itself,—something as celestial men when they have left their own proper degree and descended to live in the spiritual degree, are as it were veiled in their consciousness, and no longer clearly know who they are; so the soul or supreme essence, when in the lower bloods as it were lives and comprehends more obscurely and generally.

Thus the soul, the supreme essence in the simple cortex of the seed, widens the circle of its stream and swings into a great vortex-flow which delineates a corporeal peripheral form; gathers to itself substances from the mother, builds bloods, builds itself livingly into bloods, and, in their living tide of liquid form, passes everywhere in continual motion, knitting, altering, growing, fibre, and delineating viscus after viscus for further scenes of use.

(*To be continued.*)

DISEASES OF THE FIBRE.

CHAPTER XI. (*Continued.*)

STUPIDITY, FOOLISHNESS.

528. *There are some who live obscurely, almost in the body alone and but little in the mind. Absent-minded,* senseless, heavy, stolid, ever confused, dull, they stick in generals without any particulars, in universals without singulars; when things are said to them they perceive sluggishly and no more than half perceive; they take in objects in an indistinct way, and they have not even an inkling of the connections of things and of the superior forms and ideas resulting therefrom; they satisfy their inclinations and indulge their animus without reason; they snore night and day; hence they are obese and are thus subjects as it were midway between subjects of the animal kingdom and subjects of the vegetable. There are some who are born impotent and foolish,—a circumstance usually ascribed to magical art and poisons.*

529. *Their cerebrum is usually watery, pituitous, beset with a sluggish and viscous phlegm, of large size without cultivation, relaxed, loosed from its connections, languid, and thus confused and as it were moss-grown; also deformed, not rounded at the sides, sharp at the sinciput, an effigy of which sharpness frequently shows forth in the forehead and face. The dura mater is flaccid, torpid, not well elastic; the members of the cerebrum are not given their proper place, size and natural connection; as is also the case with the cortex in its structure, which in other respects is gross, sluggish, sparse and not entirely, still less, distinctly, formed. The cortical beds are conglutinated and, not being erect, are inattentive, insensible, wavering, somnolent, stuffed, and like sons of a fat Minerva. The cerebellum holds the key of the kingdom, even in the daytime.*

*Animus.

530. *The causes are many. The CONGENITAL or HEREDITARY CAUSES are immediately from the parents by reason of their contrary inclination, or of some affection or imprudence of the gestating mother, or of compression of the head or other injury suffered in the womb. The CONTINGENT CAUSES are from chronic diseases, cachexia* of the humors, malignant catarrhs, coldness of the blood, and a congelation as it were of the lymph. The ACQUIRED CAUSES are from long continued remission of the mind and dejection of the animus, desires, longings and loves; that is, from privation of the heats of life, and defect of the spirits,—on which account it occurs in the aged; from the giving over to the animus of the government of the mind, and from the giving over to the body of the government of the animus; from indolence, an immoderate use of sleep, gross aliments and drinks; likewise from a confused method used by teachers, undue flogging, etc.*

SOMNAMBULISM.

531. *There are some who at night are aroused as it were from sleep and, being half awake and with eyes and other senses open, move their members and body as though from will, and also talk, sing, nay, walk, go up and down stairs, and, like machines, do with the body alone whatever is to be done; but the rational mind, which is still fast asleep, does not sit at the helm, that is, does not perform its due work unitedly with the body. Thus the external man seems to be awake while all the time the internal is separated or quiescent. Nay, the things done at this time subsequently withdraw themselves into the memory as though they were dreams. The subjects are aroused from this superficial life into internal and genuine human life only by the powerful affecting of one of the senses, by pain, by a fall, or else, at last, spontaneously. Who thence does not conclude that the imagination is one thing and the rational thought another, and that they have their being conjointly and can have it separately?*

*Grievous distemper. In its bad habit or disposition, an evil root meaning the word signifies condition.

532. *As concerns the state of the cerebrum of somnambulists it exhibits nothing special wherein it differs from the cerebra of other persons; for somnambulism may happen with anyone, although with some it is a familiar trait. The cerebrum is indeed erected and its folds separated, since the subjects are awakened from sleep. But the inmost cause lies in the corticals themselves. These can indeed be expanded, can engage in work, can change their states and run through them,—but only in a general way; their internal state however lies still fast asleep and incapable of elevating and turning itself. Therefore nothing rational comes forth until those little cerebra are deeply awakened. On this account the cause of somnambulism is to be sought in the internal state of the corticals, and this is not apparent to the most acute eyes, even when furnished with the microscope, except by comparison with the larger cerebrum whereof the cortical substances are an image.*

533. *But the cause of somnambulism is usually a sleep penetrating all the way to inmosts, the imagination meanwhile remaining strong and the operation of the spirits powerful. The natural constitution is in vain visible in the cerebrum, being inseatd in those tiniest cerebra, that is, in the cortical substances. From what is visible we may be allowed to surmise by comparison that the simple fibres of which the whole corpuscle of the cortical gland consists, are obstructed and steeped about as it were by an abundance of the first essence of the blood, which essence so compresses the most simple fibrils, nay, that most simple cortex which is the origin of the fibrils, that the internal state cannot be changed. Thus there is no thought ready at hand, still less any judgment and will such as is called rational. But these points are obscure so long as we are ignorant of the form and contexture of the composition of the cortical gland.*

INCUBUS.*

534. *It is called incubus because at night time it appears as*

*Nightmare. The word is derived from the Latin *incubo* "to lie in or upon a thing."

though a spectre were incumbent upon the chest and by its pressure taking away the faculty of respiration. The subject is as though awake but immersed in phantasms; for he seems to himself to will but to be unable to act, so that effect fails endeavor.

535. The cerebrum labors from lack of arterial blood, which blood, when attracted from the cavity of the carotid,* does not penetrate all the way to the cortex, but, gliding over the surface of the meninx, falls straightway into the veins and sinuses of the dura mater; thus the vascular substance, which is abundant in the cerebral medulla, is emptied out, and so, being thus extended and stretched, it implicates the fibres; the fourth sinus† thus pours out but little blood. Meanwhile the spirit approaches through the vessels emulous of the fibre and flows into the cortex. Thus impotency of action occupies the cerebrum, nay, also impotency of sensation except in an obscure way.

536. The cause is usually lying on the back, whence results a derivation of blood into the sinuses of the dura mater,—falciform and lateral,—and of but little blood into the cortical and medullary substances; for these sinuses occupy and engirdle the posterior part of the cerebrum. There is likewise a compression of the larger arteries and veins in the body; thus the lungs, which receive all their blood from the heart and again transmit it, labor under a defect of blood. From these two causes, namely, in the cerebrum and in the body, the respiration is stifled; for the action of the animation of the cerebrum and of the respiration of the lungs is mutual and synchronous. Add to this also grossness of the blood.

ECSTASY ENERGUMENE.‡

537. Ecstasy is taken in various senses. It is as it were a state of body and soul separated, while life still continues; and it is believed that in the meanwhile the soul has emigrated from its body, or, even if it remains, that the bond between them has

*i. e., its swelling in the cavernous sinus; see 410, note.

†The Torcular Herophili.

‡Demoniacism.

been broken. Some persons are wont to fall into ecstasy before the death agony, and in respect to the soul, to be elevated outside the world, but to again return into their humble abode or prison house. Some also give the name ecstasy to the half dead state of those who have been shipwrecked, that is, who, after being immersed in the waves, are drawn out therefrom livid in body and face as though dead; but, having vomited the deadly water, and being restored by warmth, return again to their former life. Then also there are persons who, being suffocated and with throat obstructed, are often carried to their funeral couch and their grave, and yet revive. Certain species of animals, such as swallows, bears and other species, pass the winter in a kind of death without food or respiration; and there are also cases of men doing the same thing; this life also is called ecstatic. In northern regions certain persons skilled in the art of magic are credited with being able to fall spontaneously into a kind of ecstasy in which they are deprived of the external senses and of all motion, and with being engaged meanwhile in the operations of the soul alone, in order that after resuscitation they may reveal thefts and declare desired secrets. It thus appears that there are many species of ecstasies, and that they agree in this, that the subjects lie as it were extinct in body, but with the interior life still remaining. Nevertheless ecstasy differs from cataphora and coma vigil.

538. In persons subject to ecstasy the circulation of the blood seems to have stopped; for the pulse of the arteries is felt nowhere except in the cervical artery, where it is very feeble; the respiration also is gone. Thus there is nothing which shall elevate the muscles and limbs, either on the part of the blood or on the part of the lungs,—for both concur in all actions, especially the voluntary. The blood does not run through its aorta, that is, through the common trunk of all the arteries of the body; but that which enters the right auricle of the heart is carried off through the foramen ovale (which in these subjects should be open) or else through the coronary vessels, into the left heart, and from here it is taken up through the

ascending trunk of the aorta and through the vertebral artery, and perhaps also through the carotid toward the cerebellum and cerebrum; it afterwards returns by the vertebral vein, which issues from the cranium, and by the spinal veins, which run through the posterior region of the long spinal shaft, and from there it flows off into the vena azygos and for a short space into the inferior* vena cava, and thence back again into the right auricle of the heart. Such seems to be the circulation of their blood. As regards the cerebrum, it is still vivified by this slight amount of blood and at the same time by the spirit flowing in through the vessels emulous of the fibre; thus the cortical substances, and at the same time the fibres, draw a feeble breath; and so long as this continues hope of life remains in the cold body. Therefore for the leading of an ecstatic life a peculiar disposition is required,—a fact which is also known from the inspection of corpses, and is evidenced in the sea-tortoise, ducks, and other amphibians; namely, in their heart and cerebrum and in the connection between the two, which contributes the largest share to their entering into and continuing such a life.

539. The causes are many, to wit, as was said, suffocation of the throat, trachea, and bronchia by angina,† of the lungs and stomach by the water of shipwreck, and by air; and, in persons near the last agony, by the eruption of the blood from the arteries into the veins, together with a deficiency of the animal spirit. Nor would it be entirely contrary to reason to add that there are also some who are able to throw themselves into ecstasy by natural means, whence comes belief in magic.

CANINE RABIES, HYDROPHOBIA.

540. Persons bitten by mad dogs are sometimes carried off

*This seems to be a slip for superior.

†Angina, from a root meaning to straiten, narrow, was used by contemporaneous medical writers to signify the inhibiting of deglu-

tition or respiration, or of both, caused by a number of diseases, such as quinsy, bronchitis, sore throat, various inflammations, etc. (Boerhaave, *Aphorisms*, 783.)

by alternations into a like rabies, the nature of their blood or the inclination of their animus conspiring to this effect more or less vehemently or mildly. The disease is a species of delirium and wandering mania which in certain subjects so inspires the life and blood, that they burn to lay hands on whomsoever they may meet, and this even after the lapse of many years. It is said that the same symptoms are wont to result from the bite of other animals, nay, from the rage of excited men.

541. To give the inmost causes of such phenomena is not in my power; for we ought to know not only the genuine nature and composition of the blood, but also the nature and composition of poisons and of their varieties. There are poisons both of the mineral kingdom and of the vegetable, and likewise of the animal kingdom, and of each of these there are many genera and an infinitude of species. Poisons are such things as do not concord with our red blood and with our purer blood or animal spirit. Such non-concordant things are all those that, if compounded, cannot be dissolved, and if of a simpler nature, cannot be united, and which yet penetrate the vessels and fibres. They cannot be dissolved if they are too hard and compact; and they cannot be united if they are not yielding, concave, and capable of being applied to the convexity of the blood globules, as for instance, all saline, sulphurous and urinous parts both primitive and derivative. Poisons, if they be sharp-pointed, cannot but pierce, tear, and disrupt the blood globules set in the gyre of the circulation; and likewise make them cold and conglutinated, impeding both solution and composition; and thus destroy the entire mass, and at the same time, the capillary arteries and the fibres. There are also compound poisons which are at first innocuous, but presently, when they break out of their congeries or mass, go off into poisons exceedingly subtle, and thus everywhere infest the blood stream; for unless they are rejected the necessary result will be that a small supply of them will irritate the entire stream of the blood in its course through the vessels and fibres, since they invade one globule of the blood after an-

other. But the real nature of poisons is known only from their effect; namely, whether they thicken the blood into a cold and glutinous mass; or destroy the regular modes of the circulation; or tear apart the globules themselves; or lie fixed in the vessels, fibres, and in the cortex itself whence arises dementia and fury.

542. But as regards the poisons (aconita) of mad or Cerberian dogs, we may be allowed to augur that they are minute frothy or salivary globules, oval as it were and furnished with a somewhat rough tunic, and in which lies hidden a mixture of such poisons. If these oviform vesicles are carried into the fleshy structure by a bite, they remain entire for a long time, nor do they mingle in with the blood unless dissolved by heat and delay, when they produce terrible slaughter, destroying, that is to say, one globule after another, or else a number at the same time. This may be the cause of the rabies returning at intervals. As to the more proximate cause [of rabies] we may not guess.

TARENTISM, ST. VITUS' OR ST. GUY'S DANCE.

543. Tarentism arises from the bite of the tarantula. The patients lie sometimes with members benumbed and, wonderful to relate, certain melodies excite them to dancing. Demented, they leap like pantomimes,* and toss their limbs; nor do they come to, or are healed, except by a profuse emission of sweat. Not unlike is the case in St. Vitus' dance, for in this disease the arms and body of the sick person twist about in a remarkable manner, and a similar kind of dance returns at set times.

544. It is a well known fact that virus brought in by a bite is the cause of this phenomenon, but the nature of the virus is not easily divined; for there are various genera of poisons and innumerable species. Who knows the forms of each genus or species? their inconveniences with the blood and the other humors purer and grosser than the blood, and with the vessels

*Actors who express their art by actions and mimicry without speech.

and fibres? And who knows the analogy of the stringent and titillating prickles? We are ignorant of such things in the aliments that prick or soothe the papillæ of the tongue, whence comes tastes; or in the streaming exhalations that prick or soothe the glands of the membrane of the nostrils, whence arises smell; what then of those things that are taken in with no sensation! For whatever most minutely touches the organs of the senses, both of the sight and hearing and of the taste and smell, this same, and also its several differences, produces an affection all the way to the cortex or common sensory. On this latter it induces a similar state; for without variation of state the cortex would be inapt and impotent for sensation. Therefore these glands, being so many little internal sensories, are affected, that is, undergo suitable changes of state, according to every cause and variety of the forces and forms that flow in. See above, n. 479. As is the state of the sensation or perception such becomes the state of the thought and such also the state of the will; for sensation or perception, thought, and will are in one series, since in the mind they mutually follow each other. Now if forms flowing in from the organs of the senses change so suddenly the state of the cortex, what then do not the analogous similar forms in the fibres and in the cortex itself accomplish; that is to say, the forms analagous to those in which is the state of the cortex when taking in those modulations with the ear and in suitable accordance therewith leading the dance or tossing the limbs in leaping. As soon as the sensory, now dull and sluggish, is excited into this state, a like and analogous active force is also excited, just as one string is excited by another and concordant string. Nay, by certain harmonies, we ourselves are sometimes moved to dancing. I have seen a hare taking in melodies with pricked up ears, and which always leaped up at one certain melody. But let us present the following: Necessarily, the poisoned corpuscles of the tarantula stick to the fibres or else beset the cortex; they cannot put forth their forces until the sensory is excited into a corresponding and harmonious state; then, at the least such state, they cause the cortex, thus

excited, to fluctuate and leap in various ways,—hence the gesticulation and the tossing of the members as though dancing. The effect teaches this with all certainty. Furthermore, that these poisons are suitable to the blood of the tarantula but are by no means suitable to human blood; for persons who have been struck by tarantulas or scorpions are healed by a mixture of oil and the blood of these insects; such mixture absorbing things homogeneous and inmosty storing away such as can never be united with the blood of another.

CHAPTER XII.

VERTIGO, SCOTOMIA, LEIPOTHYMIA.

545. Vertigo takes its name from *vertere* (to turn). It is called *simple vertigo* or *dinos** when the objects before the eyes turn round and rotate; but this clears away in a moment. It is called *vertigo tenebrosa* when many colors come before the eyes and the sight verges to darkness; such vertigo is also called *scotomia*.† In like ratio with the sight and sensation, is weakened also the will and the force of the muscles; the languidness thence resulting is called *leipothymia*. In these cases it is not the eye that is darkened, but the common sensory; thus neither is it the muscle that grows languid, but the common motory. The sensory and motory organs of the body are only instrumental causes, or instruments whereby the cerebrum sees and acts. Anæsthesia is the loss of the faculty of perceiving the actions of objects upon the organs of the senses.

546. When this vertiginous darkness invades the cerebrum, the arterioles grow pale; together with the cortex of the fibre, they close themselves up; the cerebrum does not reciprocate its breathings and live,—for the corporeal life of the cerebrum consists in its animatory motion; hence arises vertigo. In

*The Greek word for vertigo, or giddiness.

†The equivalent Greek word.

simple vertigo however the cerebrum soon raises itself and draws back its spirits, while in vertigo tenebrosa or scotomia it is quiescent for a longer time. The like is the case with the muscles which depend on the will of the cerebrum. For as is the state of the cortex such is the state of the senses, the will, and the actions, since in them the fibre is everything, and the cortex is present in every fibre. There is also a species of vertigo when the cerebrum disposes itself to receive only the purer blood and holds the red blood off at a distance,—the latter then pouring immediately into the veins through the larger commissary vessels. In this state the cortex grows pale, the pia meninx is inflamed, and the sinuses of the dura mater are stuffed with cruor; and this is the more the case according as the patient lies with head thrown back; therefore a forward and lateral position is demanded, otherwise he will easily fall into a deadly swoon.

547. Every cause of the diminution, shutting off, and defect of the spirits is a cause of some kind of vertigo. The spirits are what course through the cortex and fibre and, by the mediation of the cortex, make a perennial circle from fibres to blood and from blood to fibre; there are also vessels emulous of the fibre, as it were venous or return fibres, which convey to the cortex the purest serum. The causes of defect of the spirits belong to the body and to the cerebrum. *Causes in the body* are almost all those that are the causes of the hypochondriac diseases, to wit: Pain, emptiness and excessive fullness of the stomach and intestines, which thus compress or stop up the mesenteric ducts and the thoracic. Consequently it is caused by ulcers, abscesses, worms, coarse and irritating foods, poisons; for at contacts like these the stomach, together with its vessels and circulatory pipes, is constricted. The constriction, blocking up and occlusion of the lymphatic passages in the pancreas and spleen, and, with women, in the womb, produces the same effect; for the highly pure humor of the lymphatic vessels, when it is instilled into the veins of the body, is immediately withdrawn towards the cerebrum, since it is extremely light, serves the better blood as a vehicle,

and carries on its own circulation. There is a like spring of perennial lymph in the cerebrum where it drips out between the arachnoid tunic and the pia meninx, between the cortical windings and folds, and between the medullary plexuses and layers; and therefore it has been chemically proved that the lymph of the cerebrum and the lymph of the thoracic duct are of the same nature. When the cerebrum is despoiled of this lymph the cortex straitway becomes faint and is rendered incapable of action. Such an atrophy and drying out of the cerebrum is a cause of vertigo, for when the blood is too dry it cannot be brought near to the cortex. Vertigo and languidness or leipothymia and swoon arises also from an excessive emission of the blood by venesection, hemorrhage of the nostrils, or wounds; also from excessive outpouring of the sweat as in baths; from an excessive exercise of venery; likewise also from sudden occlusion of the least pores of the cuticle, the inhibition of the Sanctorian perspiration, cold, etc. *Causes in the cerebrum* are almost as many as are the sicknesses of the animus which suddenly constrict the cerebrum and cortex, and expel the mind; such for instance as grief, sadness, fear; also, in certain subjects, anger; consequently all circumstances that produce such changes; likewise over-intension of the mind, especially when the sickness of the animus penetrates deeply into the sphere of the operations of the mind. Thus the cortex is closed and, the cerebrum compressing itself, the way of transit is interrupted; nor does the cerebrum revive except after some delay and at the urging of the great need of the body. The more prone the animus is to changes, and the more sensitive the mind, so that the change deeply penetrates the mind itself, the greater is the proclivity to vertigo and swoons. Therefore this condition obtains more frequently in the feminine sex than in the masculine; for men fall into swoons for the most part from causes in the body, while women, being more tender and sensitive, fall into swoons from all the causes in the body and in the animus, and from almost every sickness and grief; to these causes is also added a cause arising from hysterical and other diseases of the womb. With

some this evil condition exists as an inheritance, with others as an acquisition; for when swooning returns too frequently, the cerebrum easily becomes accustomed to it, and at last it falls and faints away at a very slight stimulating cause.

(To be continued.)

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THE RELATION OF THE SPHERES OF SUBSTANCES TO THE PHENOMENA OF COLOR.

BY WILFRED H. HOWARD.

It is now a generally accepted fact that from all substances there proceeds or emanates what by Newchurchmen is called a sphere, or to use the language of modern science all substances are radio-active, all substances are found to be either para-magnetic or dia-magnetic, they are either repelled or attracted by magnetic forces, to a greater or less extent.

It is one of the fundamental doctrines of Swedenborg's philosophy, that there is no substance without its sphere, which acts as the soul of that substance, and is as necessary to its existence as the soul is to the human body.

Thus we read in D. L. W. No. 172: "Even out of sand a nature breathes which contributes aid to producing something, and therefore to effecting something."

In the light of such teaching it would seem, therefore, that we are no longer to conceive of matters as being purely inert lifeless substances, but rather as being centres of an ethereal activity or sphere which sphere differs according to the quality of the substance, there being no substance without its sphere, and all characteristic qualities of any substance—such as its power to conduct Heat, Light, Electricity, etc.—depending upon the quality of the sphere that emanates from that substance.

Says Prof. E. Thompson: "It is now held to be a fact that electrical phenomena, energy, does not travel in the wire, but in the ether surrounding the wire, the wire is but the guiding core

of the disturbance in the ether which proceeds outwards in all directions to unlimited distances, the guiding core of the conducting wire is needed to focalize or direct the delivery of the energy" (*Essay on Electricity during 19th century*).

This theory somewhat falls in line with Swedenborg's universal law that it is the sphere of a substance, rather than the actual substance itself that is operative in any phenomena of such substance. With these ideas in mind, let us consider their possible relation to the phenomena of color.

Light and color is a condition of or the result of etherial vibrations, or as expressed by Swedenborg, a tremulation of the surface of the ether or 3d aura bullæ. Although there are many octaves of etherial vibrations yet only one is distinguished by the eye. In the case of sound the ear can distinguish over eleven octaves. The eye, however, can distinguish only one from what is sometimes called the etherial keyboard. It is supposed that the red rays just visible to the eye have a wave length of 77 millionths of a cm. and 390 millions of millions of vibrations per second, and at the other end of the spectrum or octave, namely, the violet, where it passes beyond the realm of the eye the wave length is 39 millionth of a cm., and 770 millions of millions of vibrations per second.

In sensating color, therefore, the eye is simply registering an impression caused by a wave motion in the ether of a certain wave length and frequency of vibration.

The difference of the colors of substances is said to result from the fact that of the colored rays contained in white light one portion is absorbed at the surface of the body; that is, if the body is opaque, the unabsorbed rays are reflected, and the color of the object is determined by the reflected ray. If, however, the body is transparent, such as colored glass, etc., the unabsorbed rays flow through and give to the glass its color.

In all color phenomena, therefore, it is the unabsorbed or the reflected rays that the eye sensates, and that determines the color of the object. Scientists have pointed out certain difficulties or problems of the color theory which we will briefly consider.

The general conception of the luminiferous or light bearing ether is that it penetrates all substances, and that on account of its tenuity it passes unimpeded through the interstices of all substances, just as in our conception of the third aura we suppose it to have the power of passing unimpeded through all earthly substances and matters.

Says Prof. Grove: "An objection that immediately occurs to the mind in reference to the ethereal hypothesis of light is, that the most porous bodies are opaque; cork, charcoal, pumice stone, dried and moist wood, etc., all very porous and light, are all opaque. This objection is not so superficial as it might seem at first sight.

"The theory which assumes that light is an undulation of an ethereal medium pervading gross matter, assumes the distances between the molecules or atoms of matter to be very great.

"Matter has been likened by Democritus, and by many modern philosophers, to the starry firmament in which, though the individual monads are at immense distances from each other, yet they have in the aggregate a character of unity, and are firmly held by attraction in their respective positions and at definite distances. Now, if matter be built up of separate molecules, then, as far as our knowledge extends, the lightest bodies, such as cork, charcoal, wood, etc., would be those in which the molecules are at the greatest distance, and those in which any undulation of a pervading medium would be the least interfered with by the separated particles—such bodies, therefore, should be the most transparent" (*The Correlation of Physical Forces*, page 127).

To quote further from Dr. Saleeby in his Essay on Light. "The reader will not labor under the delusion that when we have stated the laws of reflection and refraction we have in any sense whatever explained them. What in fact is the relation of the ethereal disturbance to the matter through which it passes or from which it is turned back we can by no means say.

"The discovery of unbroken laws, regulating all these phenomena, may, and will, however, be expected to lead us to an explanation of them. It is evident that wherever there are

laws of phenomena there must ultimately be explanations of them, could these be discovered."

Recent theories of matter suppose that molecules of all substances are in a state of intense activity, and that the mean free path or interstitial space is greater than the wave lengths that give rise to color; now if this be true, and if the unimpeded flow of ether through all substances be true, we are led naturally to ask the question, why is it that the ether is reflected from the surfaces of substances.

In order that there may be reflection of any kind, an impeding medium is necessary.

By way of analogy although crude, a ball thrown at a wall is reflected from the surface of the wall and obeys the laws of reflection, in like manner as does light, simply because it is too gross to penetrate the wall; if it possessed the quality of penetrating the substance of the wall with unimpeded motion no reflection could occur, but it would naturally pass through the substance of the wall, rejoicing in its unrestrained activity.

The conditions of reflection are not those of unimpeded motion. In order that any substance may be reflected from the surface of another it is necessary that the reflecting surface resist the passage of the substance reflected. Thus when the waves of ether strike an object and are reflected back to our eye and, according to the wave-length, give rise to the sensation of color, it cannot be said that these waves are passing through the object, and yet it seems clear from many experiments that the ether can pass through substances.

The question remains, what is it in the gross matters and substances of the earth that reflects the etherial waves back to our eyes, and gives to the object its characteristic color. It is here that Swedenborg's theory of the etherial spheres surrounding all substances offers a suggestion.

It would seem that a nexus is necessary between the interfluent ether and the gross matters of the earth.

Swedenborg's universal laws of influx and efflux are perhaps too well known to need quotation here. We know from these laws that all substances have a characteristic sphere,

emanation, or afflux, according to form, and as the quality of the sphere of each man is different according to the form of the man, so is the quality of the sphere of each substance different according to its form.

Picturing any object of a definite color, we have first the gross substance of the object, so gross that of itself it could in no sense arrest the flow of ether through it,—but around this substance and flowing through it as the soul does through the body, we have a subtle ethereal sphere, of a definite quality or activity according to the substance, and this sphere being of a like quality or upon the same plane as the ether, would be empowered to arrest or absorb certain of the rays of light that strike the object, and to reflect others back to the eye, so that by virtue of the subtle sphere of the object acting as a nexus certain rays are reflected, from the object, others absorbed, and according to the rays reflected, the eye perceives the sensation or color of the object.

In his little treatise on the Animal Spirit, Swedenborg states that "For the most perfect to act upon the imperfect there must be a link of intercession, which shall derive something from the perfection of the one, and from the imperfection of the other; this is the animal spirit" (Ch. iv). Further, "The soul is spiritual, the body is material; hence it follows that this animal humor is both spiritual and material. Were it otherwise the spiritual could never operate upon the material or *vice versa*" (Ch. v).

Applying the law that nature is the same in greatest and in leasts, we can suppose the sphere of a substance to act as the link of intercession, the animal spirit of that substance, and to be of sufficient tenuity to arrest the delicate waves of light, to absorb, and to reflect them at its pleasure.

The necessity of a subtle ether is suggested by Swedenborg in his CHEMISTRY, p. 128 (Appendix on Color), where he says:

"But these substances becoming and exhibiting colours seem to be owing to the paths of reflection being filled up in all directions with *subtle matter*, which matter is compressed and dilated in different ways and degrees according to the shape and calibre of the pores that it enters, and communicates a different refraction to the rays that permeate it whereby the light is confused and colors of various sorts are presented."

The following quotations from Priestly's Chemistry seem to suggest a sphere-theory of color:

"When light falls upon other bodies, part of the light is reflected, at an angle to that of its incidence, though not by impinging on the reflected surface, *but by a power acting at a small distance from it.*" (p. 149).

Again on p. 153 we read: "When rays of light pass near to any body, so as to come within the sphere of its attraction and repulsion, an inflection takes place; all the kinds of rays being bent towards, or from, the body, and these powers affecting some rays more than others."

In an article on the perception of light and color by George Lechalas, published in the Smithsonian Institute Report, 1898, we read: "In a separate publication on the visual sensations produced by the galvanic current Muller announces it as a general fact that when the current passes through the eyes toward the back of the head, the subject experiences a bright blue-red color sensation, while if the color passes in the opposite direction, the sensation produced is that of a dark greenish yellow."

As we have formerly stated electricity is a phenomena of the ether, and from the above quotation it would seem that here we have the sensation of color without substance at all, the cause being due purely to electricity, an activity of the ether. This would seem to be a confirmation of our suggestion that color is essentially an attribute of ether phenomena, rather than of substance, *per se*.

In conclusion, the objection might be raised against this theory, namely, that Swedenborg himself did not definitely state such a theory in connection with color. But does it not seem that we are to consider Swedenborg as a philosopher rather than a scientist? It is true that he was eminently a scientist of his day. But what are the conditions of the scientist of any day or era, as over against or compared with the true philosopher. Science is an accumulation of observed facts, and as such, can be said to change or increase from day to day.

Philosophy dealing with first principles or causes that govern these facts, is, so far as it is a true philosophy, an eternal or

constant quantity. A true philosophy will never change in all the ages that are to come, whilst scientific conception will of necessity change with increasing years.

Swedenborg, as we need hardly mention, was of philosophers the greatest.

As a philosopher Swedenborg was par excellence, the philosopher of all time, and there is no science, that is, or is to be, that will not eventually be explained from the principles of his philosophy.

As a scientist he was limited, as all scientists are, to the facts of his day, with the exception that he was possessed of a clearer insight, that enabled him to advance even along scientific lines far beyond his day.

As he so often states in his *Principia* and elsewhere, he had sufficient facts to construct his philosophy, and because he was truly a servant of the Lord, perception was given to the end that through him a true philosophy might be given to men.

PHYSIOLOGICAL PAPERS.

BY LILLIAN G. BEEKMAN.

VIII (*Continued*). THE THREE LINES OF HEREDITY.

Wonderful things look out in this history. For instance, four successive epochs define themselves in shaping of brain, heart, lungs; each epoch being characterized by a changing type of circulation in the vortexing vital essence.

Here a wonderful thing appears! Over against the typical circulation of each epoch in the forming microcosm, can be correlated an analogous type of circulation in some great macrocosmic class of animate creatures; namely, in the type characterizing the insect kind; in the type belonging to the fish; in the reptile type; and in the mammalian. Tantalizingly the analogies look out, alike suggestive and tantalizing in the likeness and in the unlikeness.

As Swedenborg says, The first substance of the microcosm is the same as the first substance of the universe; and the first

substance of the animal form is also the first substance of the world, and thus the habits and steps of its action bear always a resemblance to itself.

In the production of the microcosmic form, all the possible series of its organic changes and activities are like beads gathered upon one string, which, in the macrocosm, are as beads scattered abroad. The body of man is the epitome of all the series of creative acts which, in the universe of diverse creatures, are to be seen exploited in division and separateness.

Thus the flowing living tides weave the form step by step, epoch by epoch. It is the Golden Age,—this age of the pre-natal forming. Yet in all this building and upbuilding, this ceaseless wonder of intricate life, individuality, motion, the flowing tides everywhere respect and leave unfilled those inmost organic structures of the beginning will and understanding in the cerebrum,—the brain-province of the voluntary and sensitive intellectual. So that, up to the hour of birth when the little infantile form so full of life and busy growth is being ushered into the world and air of the sensitive and voluntary life, almost all the gray cells of the cerebrum remain as little grown, as embryonic, as they were after a few weeks' gestation. Their nuclei are there, and also the serviceable tissues,—the vascular system. But the embryonic gray walls, brought into microscopic view, are yet unfilled; in their inmosts, in the spiritual forms of will and understanding, they have not as yet been made permanent and fixed forms; neither are their fibres as yet produced from them to any extent. But the return nervous fibres from the corporeal unities of the peripheral sensory system and from the peripheral vascular system are grown and are reflexed fully back to them, surround them, are ready, and wait. Then, all done, the little hour of the organic call and opportunity arrives. There is a lack of oxygen. The nervous organic chain is precipitated through the series to its mechanical organic result.

The circle of the ultimated blood, after returning from the ultimate of its vortex in the body back again to the brain, there resolves, freely laying down its grosser connectives, and ascending to the finer degree of composition, life and power;

and at the call of the more deeply opened cells, it runs through and through them, from their circumference to their hearts, unclothing itself, and laying down along its organic path more and more of the effluvial particles compacted with it. Simultaneously with that unclothing, that partial disembodiment, that half-way or mediate stage of the ascension of the red blood, the fixing and infilling of the mediate plane of the mind or spirit hereditary in the seed, is accomplished.

The spirit is born as well as begotten. In it spiritual and natural are now united in indissoluble bond.

If the babe die this hour, yet, from this hour, it is a form everlastingly individual in the spiritual world and may partake of all the powers and joys of the higher degrees so far as they can be contained in, and be as it were spelled out by, the letters of the hereditary racial form and infilling.

Thus, at the time of the exclusion from the womb, the gray cells or cortical glands of the cerebrum are, with man, not relatively infantile only. With the exception of a few isolated groups in immediate connection with external sense-organs they are actually all embryonic. The whole of life on earth, is, for man, for the gray cells of the cerebrum, a period of pupilage, of nonage.

During this period of pupilage, the human spirituous fluid, the internal or Soul, (with its Sarai consort, the simple or celestial cortex), as the Lord's internal man within, combines with the circling reflex of bloods from the body below, and, with the Providence of circumstances and experience from without acting through the peripheral sense-organs, to initiate those gray cells into the motion of their life with daily widening ranges of sympathetic sense and the actualization and increase of their intrinsic potencies of self-effort, self-direction,—whether spontaneous or prohibitive,—which operate by a species of subtle amœboid motions, as well as by powers of inner tension and resistance.

Thus, during the period of man's natural life, the gray cells of the human cerebrum, the units of the middle mind, intermediate between the celestial cortex and the corporeal and sensual body, stand as it were as babes to be set on their feet; as

children to be led to self-exercise and instructed and nurtured, and trained into firm and skillful habit; as youths to be indoctrinated into large unifying grasp of multiple facts and laws; and as lovers fixing the rank and the feature of their everlasting loves.

It is a great extension course of instruction, growth, formation, into which, with their first breathing cry, these cerebral cells, these cortical glands, are entered as initiates. And from first to last in this schooling world they are incited and excited to self-exercise, development, and storing of sympathetic sense, self-endeavor, and acquired habit, by teachers set over them, and teachers set under them; by the Supreme Teacher, indeed. For He who alone is wise and Creator, the Lord in the human internal or soul, acts upon them through forms and organic planes both above and below that of their own proper level.

With every man there is an internal, there is a rational which is mediate, and there is a natural (*A. C.* 2181).

The rational man is not connate but is only a faculty that the man may become rational; as may be plain to everyone from the fact that new-born infants are endowed with no reason, but become rational in process of time by means of external and internal sensuous as they are imbued with sciences and knowledges (*A. C.* 1893).

By Sarai is signified intellectual truth which is adjoined as a wife to good. Intellectual truth which is in the inmost is wholly barren or like a childless mother so long as there is as yet no rational into which and through which it may inflow. For without the rational medium it cannot inflow with any truth into the exterior man. This may be plain from the case of infants. These cannot know the least thing of truth until they have been imbued with knowledges; but the better and more perfectly they are imbued with knowledges, the better and more perfectly can intellectual truth which is in the inmost, or is with good, be communicated. This intellectual truth represented by Sarai is the spiritual itself which flows in through heaven,—and thus by an internal way, and with every man,—and continually goes to meet the knowledges which are insinuated by things sensual and implanted in the memory. Man is ignorant of this truth because it is too pure to be perceived by a common idea. It is like a certain Light which enlightens and gives the faculty of knowing thinking and understanding. The rational cannot exist except also by the influx of intellectual truth represented by Sarai (*A. C.* 1901, 2093; *T. C. R.* 8; 1 *Ad.* 656, 666; *A. K.* 514; 2 *E. A. K.* 296).

There are two ways into the human intellect, namely; A way through the senses, which is the inferior way; by this way is born the human intellect. And, A way through heaven from the Lord, which is the superior way. Whatever is born through the inferior way is corporeal and material; but whatever is born through the superior way is spiritual and celestial (*S. D.* 899; *A. E.* 726v; *W. L. G.* 61; 2 *E. A. K.* 323).

The rational mind is not that superior and supreme mind which lives in us; for the rational mind cannot draw its essence and life from itself since it is acquired by cultivation, sciences, and art, and, in process of time, becomes such that it possesses in itself more than all the sciences in the universe can ever exhaust. This it derives not from cultivation and experience, nor from itself. There must by all means be a superior mind which shall flow in and which is pure and spiritual and possesses in itself all that nature which we admire as the superior in that mind, and from which we draw only a few drops in order that we may conceive and bring forth our theoretical and physiological sciences.

The mind called rational is not properly the mind; for it is midway between the mind and the animus and partakes of both and thus is born of both. Into it from above flows the spiritual mind and from below the natural mind or animus, and this is the reason why it is called *rational*; for to be rational it ought to partake of the spiritual and of the natural. The more it communicates with the spiritual the more eminently rational or spiritual it is, but the more it partakes of the animus or natural mind the less rational or the more corporeal it is (*Soul* 305, 306).

The order in which the cerebral gray cells are incited and excited to self-development is as follows:—

FIRST. By the supreme ground of the flowing, omnipresent, internal or soul,—the spirituous fluid,—as well as from the ground of the simple cortex, the Lord and the celestial flow into them interiorly, incite them; give them inner lights, intuitions, checks; meet all their needs and states with accommodation, support. They are acted upon thus from an organic ground higher, more living, more interior, wiser, than themselves,—even from a ground determined in that primal aura which, from the beginning, was wisdom and the Spirit of God with God. Yet this organic ground, however higher and wiser than they, is in them the very Canaan and Promised Land of celestial heredity, and is actually in touch, grasp, contiguity, pressure, with them; and through it also is given to them life.

SECOND. By the supreme ground of the flowing, omnipresent, internal or soul immediately in ultimates; and also from the omnipotent fibre immediately creative and governing in body, peripheral sense-organs and bloods,—in both which the Lord Himself moulds, disposes, governs, the ultimate bodily viscera, the outer sense-organs, the building, constructing, living, bloods; thus, also from organic grounds lower than the cortical glands and ulterior to them, the Lord acts back upon them,—those cortical glands,—as by afflux from ultimates, to excite and stimulate, and to give life by this way also.

Between the two,—the Lord in the first and in the last,—this mediate, unperfect, mind of the gray cells, the cortical glands of the cerebrum, stands all life-long in the relation of child, pupil; itself co-working with the Lord in its own formation; and, by self-exercise, self-compulsion, self-determination, conditioning all that is done for it.

This ground of the gray cells of the mediate mind, the rudimentary rational, is the plane of the second aura (*Soul*, 16, 21, 23, 90; 2^d *E. A. K.* 289); and the ground of the spiritual animal life.

This is indeed the inmost organic ground, where man has co-powers with the Lord. It is also the inmost ground where the result of that co-action can be registered. Thus the inmost ground where man's reciprocity to the Lord may be as sacramental bread. Hence the show-bread was in the second apartment of the tabernacle (*A. C.* 2165, 2177, 3478).

It is moreover the inmost ground to which sensations from the outer world can ascend.

Meanwhile, everywhere, every hour, so long as man lives in the natural world, through organic planes and special viscera, the Lord in the human internal, co-working with His external providence, sees that each growing inclination of love, each momentary sense of delicate perception, each outreaching curve of thought, each delighted idea or act of the cortex of the cerebrum, has its meat in due season for its enlargement and infilling; and this, not only by providence through the sense-life, but mainly through substances correspondent brought to the brain by the returning vortex of the

bloods. For nothing,—no idea, no organic principle, no love,—ever passes into the man as his own, until the curve or motion of its passing out-reach in the spiritual substance of his mind, his spirit, has received infilling substance actually, from that which is a piece of the very substantial material ground or sphere that is a correspondent of the same in the macrocosm. Then first is the man “seizin of it,”—as in the old common law of “seizin of land” when no land finally and irrevocably passed into purchaser’s possession until an actual portion of the very soul of that land had physically passed into his hand.

Thus, in the human order of construction and form, the life of the Lord in the supreme essence is determined to the mediate plane of the spirit or mind by two ways:

- (a) By the inner way of the celestial or simple cortex in each unit of that mediate form.
- (b) By the reflexing tide of the vortex of life and of living proceeding which, rounding out to ultimates of corporeal form and peripheral sense-organs, returns back again to the brain and mediate plane; thus as it were by afflux.

With the life of the Lord coming to the rudimentary plane in two ways,—from firsts and lasts simultaneously; with the hand of God-man pressing and moulding both within and without; swift and rapid would be the growth of that young plane in power and in favor with God and man.

Such is the order into which man was created; the order written in his very constitution as a form; the state, association, relative powers of his parts.

In such order are not we, alas, the human race upon this earth! nor have been for long ages! For us, because of the twist of hereditary perversion induced in the lower plane of the transmitted seed, the first influx,—the life of the Lord coming into the intermediate plane by way of the internal man,—is as it were obliterated, extinguished, rendered of no account.

The second influx,—that of the life of the Lord coming by the way of the vortex-reflex from ultimates and peripheral sensories,—is the only influx left which the human mind will receive before reformation and regeneration of that injured plane. Till then, that mediate plane receives the influx of life by the lower or ultimate line only. This is our plight, our organic injury here on this earth. This is called the Fall of man.

FALL OF MAN AND DESCENT OF SENSE.

On the order instituted by God in man in first creation, and on the inversion of that order, we read:

In man there was such an order that the verimost life which emanates from Jehovah God flowed into the human, soul and through that into the intellectual mind, and from its intellect through the will into the inferior mind which is also called the animus, and so into the actions which are of the body.

By the Fall he who was perfect is become altogether imperfect and the state is wholly changed.

That order is so inverted that the Divine life which before in flowed through the soul into the human (or rational) mind afterwards in flowed through the external senses into the inferior mind and from this into the rational mind (1 *Ad.* 655, 665, 666).

"If man were not imbued with any hereditary evil then the rational would be born immediately from the marriage of the celestial things of the internal man with its spiritual things; and through the rational would be born the scientific; so that man would have with him every rational and every scientific as soon as he came into the world." This would be the case with man on this earth "had not order with him been destroyed. . . . This is the reason that now the rational of man must be formed (or grown) in an entirely different manner, or in another way, namely, by scientifics and knowledge insinuated by the senses, thus flowing in by an external way, and, consequently, in inverted order. . . . This is meant by Abram's going in unto a handmaid" (*A. C.* 1902).

Hence also it is that at this day by reason of the Fall "interiors and intuitions have receded from man until they are only in externals" (*S. D.* 2950).

This is not a light thing that has happened to the race and that thus fundamentally affects the seed in this perversion of our mediate plane, even the rudimentary seed. We suffered

a grim dismemberment. It was a racial mayhem. Our wills with their primary perverted torsion to self and the outer life, were thus become without inclination to civic good; and this thrust the race itself into savagery, the individual into war-like isolation,—robber or robbed. The interior sensitive property or power of the mediate plane, the very proprial touch and sense of the organic man, by the perversion of the series of the lines of its constituent units, closed itself as it were to its own celestial cortex, and opened itself to the outer sensory alone; and thus grew coarsened and heavy from its habit of response to grosser and exterior stimuli alone.

The sensual (or organic prime, the common sensorium) was the cause of the Fall; for "it turned itself away from the celestial and turned itself to the corporeal (the body and the exterior world) and thus cursed itself" (*A. C.* 242).

So that the opening of the very bodily powers could begin to be, only by influx through the senses.

For the earthly body does not receive its first sensations and motions from the interior or spiritual world, but from the exterior or natural world. Wherefore infants in the world must learn to walk, to use their limbs, and to talk (*H. H.* 331).

As for the human organic understandings belonging to this mediate degree, their reversion, their perverted irresponsiveness to their own internal man, flung them to the ground, as it were, emptied of interior influx of life and of what the mediate man had already racially acquired harmonious to and recipient of the fulness of the internal man within him,—because as it were atrophied and lost.

Moreover, as in that Fall one of the parts of life was lost like a lost and hidden Word, therefore the understanding was reduced indeed by this dependence for the life of its growth, and for the government of its shaping by the Lord's life, upon that government reaching it during its roused waking hours through the way only of the exterior senses and their experience; especially with a race whose self-directed wills had flung them into becoming a lot of savages of quarrelsome and dangerous robber isolations.

For from every creation of human beings it is a law of constructive order in the framing of the human recipient form, that the substantive ground and formal organic basis of the sensual-corporeal imagination, corporeal memory, and brain-knowledge, pertaining to the order of its own soul and to the creature's own province and office in creation, shall not be prenatally formed for the human young as part of their hereditary gift; as, on the other hand, they are prenatally formed for the young of other classes of animate recipient forms, as part of their racial organic gift. For with other living forms the very ground of orderly memory and imagination and brain-knowledge is formed for them by the Lord prenatally.

This difference is, of course, to give the man a chance to build and shape one of the planes of his organic form for himself; to himself be parent to one of the planes he takes with him into the other world,—one of the planes, moreover the growth of which individually conditions and defines his personal reception and appropriation of the Divine and of celestial fullness of human good and truth and power, bestowed in the human internal man upon every individual conceived of the human race irrespective of person. See the Sixth Paper (*New Philosophy*, January, p. 7, *seq.*) on the corporeal memory.

At birth the human creature is thus brought forth incomplete as to this organic plane of the spirit or mind and its brain,—and this that he may have the personal responsibility and power of a selective completion of that plane by its own exercise; and also the constructive responsibility for still another degree, practically the whole of which waits its formation until the opening of the sense-life.

This is all right so long as the mediate plane of the voluntary and sensitive mind is in the state in which it was primarily created, namely, receptive of the influx of its life from God-man by the normal two ways,—through the internal man as well as through the external senses. In that case it grows fast, led softly, and interiorly bent in the order of heavenly government,—and inward leading and outer Providence gently coincide.

But when the mediate plane of the voluntary and sensitive

mind is reduced and confined to the way of the outside influx of life coming through the afflux-way of the channels of the exterior senses and the exterior experiences of life, then indeed the case is hard. For experience is a hard teacher to the unlovely, the selfish, the murderous, the stupid. And when, moreover, under such conditions a remedial order had to establish itself, it was as if a man had a stroke and waked out of it stupid, quarrelsome, without memory,—the use of his senses gone from him unaware,—and now had to begin over again; and, in the as-of-itself life, by the teaching of the daily personal experience, to acquire for himself a new personality, to establish new organic adjustments of remedial order; and thus, by a sort of hypertrophic exercise of the remaining senses, manage to go crutching on his crippled way. If but he could live a life a few thousand of years able to make a step or two toward recovery of condition!

Herein, for man on this earth, with this the Fall of racial man, began for him the slow recovery and remedial growth of the mediate mind or spirit; its evolution along the line of powerful organic readjustments of growth by exterior means; and the very reception of life by and coincident with the experiences and reactions of environment, the jostle and conflict and compromise of contending selfishness, organic selections, survivals of the fittest.

And it failed this way. The race was drawn near to extinction, although it had built up in this remedial, exterior, fashion a powerful ultimate mental organism, and here and there a powerful sensuous and civic order greater than that on all the other earths.

Because of this failure, when it was pronounced complete and the race drew near to a second Fall greater than the first, even to racial annihilation, God-man Himself had to come and by incarnation make the proprial human planes also, part of the God-Man life,—both those derived from the paternal racial heredity, and those derived from the maternal; the rational man, the interior sensual, the exterior sensual, the corporeal.

These He took to Himself and in Himself made them order,

not disorder; infinite and unbounded, not finite and partial; Divine, not perverse and tangled. For "the Lord made Divine all that was human with Him, thus not only the rational (organic), but also the interior sensual and thus the very body itself" (*A. C.* 2082). For the racial human begins in the mediate or rational principle and thence extends itself to man's external (*A. C.* 2106).

Thus God-Man took on the proprial planes of the human form,—the racial planes where man is co-parent and actor with the Lord, and where woman is co-parent with the Lord; and this even to the factors of the infilling and helpmeet substances.

He took on Manhood and a human shape (*Inf. I.*, xiv, 5); and, making them infinite and infinitely orderly, and keeping them as part of the God-Man forever, He has thus empowered Himself to live the life of that Infinite along with the finite creature, on all the racial planes.

Thus the conjunction of the Infinite and supreme Divinity with the finite form upon each and every of its human or racial planes is made infinite and immediate; that thus these planes might be sustained immediately; the finite rational by the Divine Rational of the Lord; the finite interior sensual or sensory by the Divine interior sensory of the Lord; the finite exterior sensual by the Divine exterior sensual of the Lord; the finite corporeal by the Divine corporeal.

And, moreover, from the same planes made infinite in Himself, He gives to those finite human planes not only life but light. For the Lord, who as to essence was Light, put on man's rational principle and also his natural, that they, being made part of Himself and Divine, might be given light (*A. C.* 3195, 4180), and this through or by means of the Human in Himself (*A. C.* 4180). For thus only could the conjunction of the Infinite and Supreme Divinity be full and sustaining with the race of human organic forms upon this earth, upon all the planes thereof (*A. C.* 2034).

This is like the story of the prophet who came to the child who had died, and stretched himself upon the child,—body to his body, hands to his hands, eyes to his eyes, mouth to his

mouth,—and breathed into the dead the life of the living. But the prophet who has come unto us in our fleshly estate, and made Himself flesh that He might come, is no prophet but is the Heir, the Only Begotten, the Son from eternity Himself. In Him, by that coming, the rational and inner sensual, the outer sensual and corporeal, in all their factors of the form and shape of man, were made infinitely Divine and part of the Lord God-Man procedent in the universe.

Hence it is that we of the New Church worship the Human of God-Man the Lord, always our creator, now also our Sustainer and Saviour, Emmanuel, God with us.

Moreover, this history of organic form and of the order of growth and life, is the story told in the Old Testament, the story hidden in the arcana of the Hebrew Scripture, the meaning of which has been revealed to us in the fullness of ages that the truths and laws thereof may be for such reformation and further growth of the rational as shall lead to the restoration of order and to the possible inheritance by that rational plane, of the celestial heredity of its own internal man.

This is indeed what we call the Second Coming of our Lord God-Man, coming thus to redeem and perfect and empower the rational to that end. For in Isaac still is the seed called.

SUMMARY.

In every human form, heritor of everlasting existence and life, there meet and are conjoined three heredities :

1. The heredity of the Lord alone.
2. The heredity of the paternal line co-working with the Lord.
3. The heredity of the maternal line co-working with the Lord.

In the human creature who dies an infant, these three are the basis, the capital, of future existence; and then they are all three combined in that form of the spirit which the individual creature is.

In the human creature living to adult age, another line of heredity is woven in; a line in which the human creature himself, co-acting with the Lord in the body and the world, is the

former and as it were parent of another organic degree of faculty conditioning further the prior heredities. This is a degree lower than the rational or organic principle, and it is called the natural degree of the spirit, or the natural mind. It is the organic substance and ground of the corporeal memory, the sensual corporeal imagination, and all the fact-knowledges derived from environmental reactions.

This organic degree is distinctly lower than the rudimentary rational, and it grows out from the physical unities of the latter,—the cortical glands,—as a sort of ultimate excrescence thereof, almost as hairs grow out from the ultimate life of the body of man (*A. C.* 3301).

The obvious physical structure, the sustained and grossly infilled composite, belonging to this degree which is formed after birth, is exteriorly presented to microscopic view in the dendritic outgrowths developed in the course of life and education about the nuclear centres of the cortical glands; especially, if not exclusively, of the cortical glands of the cerebrum. Compare *A. C.* 2487; *D. P.* 279⁴.

This lower or more ultimate corporeal imaginative- and memory-degree, as shown by quotations in the preceding Paper, conditions all the superior planes, and even the reception of life from the Lord,—and this to all eternity. Its interior structure, with the finer infilling thereof, as man has formed and procured it to himself, still remains with him after death.

And the formation of this degree, with the completed development of the rational or mediate degree, is the natural and corporeal soul which man forms (e-forms) for himself while in the world.

Here then, in the one full form which the supreme essence forms, we have four grades of faculty and embodiment; four men, as it were; four degrees of human organization.

1. The internal man.
2. The rational or mediate man or mind.
3. The natural man or common inner sensory and memory.
4. The body with its peripheral exterior senses, which is in the human form, God with us exteriorly,—the deep which

coucheth under; the good will of Him who burned in the bush.

These four constitute the full and full-grown human. They are actually in the human form of every adult human being upon earth. They are in our Glorified Lord,—the Divine Human God-Man in the universe. In Him each is in unmeasured and Divine fullness and perfection even to the Divinity of the infilling or helpmeet substances.

But the study of this four-fold man, we reserve for our next Paper.

(*To be continued.*)

DISEASES OF THE FIBRE.

CHAPTER XII (*Continued*).

SWOON, SYNCOPE, ASPHYXIA.

548. *Swoon* is also called *falling vertigo*; it is generally preceded by *vertigo tenebrosa*. *Syncope* is the name given to a sudden swoon without motion or sensation and with a very feeble pulse remaining. *Asphyxia* is like *syncope*, but with the loss of the pulse.

549. Simple *vertigo* is the first degree of swoon, *vertigo tenebrosa* is the second, *syncope* the third, *asphyxia* the fourth, and death the last. The state of the cerebrum of a patient in swoon is like the state of the vertiginous cerebrum, except that there is more or less defect of the spirits, and a longer-enduring or more compressed occlusion of the corticals or of the fibres; both the quantity and the quality are known from the effect. When the cerebellum is deprived of its spirits, then, as in the case of *asphyxia*, the pulse of the heart and arteries also ceases. It is therefore superfluous to enumerate causes since they are the same as those mentioned above in treating of *vertigo*.*

550. The proximate cause of the motion of the heart is

*The chapter on *vertigo* (n. 545 *seq.*) mentions only the cerebrum; but by this is meant either

the whole brain in general, or the cerebrum in particular.

the venous blood flowing into the right auricle of the heart. A more remote cause is the blood which comes down through the jugular veins from the cerebrum as from a certain living fountain, and ever excites the circle of blood to a continuation [of its course].† A cause still more remote is the spirit of the fibres, or the fibres that flow into the præcordia‡, —fibres which belong to the cerebellum alone. Therefore if there be a cessation of either the first, second, or third cause of the motion of the heart, straightway the pulse also ceases; but of these points we have treated in Transaction I in the chapter on the Motion of the Adult Heart [n. 468 *seq.*; see particularly n. 512-537, 553-557, 558-561-578]. Consequently any cause giving rise to palpitation of the heart may also be a cause of swoon.

551. On the other hand the respiration of the lungs arises proximately from the incumbent and inflowing air according to its weight; the lungs themselves expel this air from their vesicles, being aided by the joint effort of the ribs and muscles which compress them. More remotely, however, the respiration of the lungs arises from the cerebrum, cerebellum and medulla spinalis; for the fibres belonging to these three flow into the costal and other muscles of the thorax and abdomen. The causes of the cessation of the respiration and pulsations in swoon are therefore apparent.

ATAXIA.

552. It remains to be added that in all the diseases of the head enumerated above, that is to say, in swoons, vertigo, tarantism, mania, deliriums, apoplexy, epilepsy, etc., there is an irregular flow of the spirits, or *ataxia*. Ataxia is present not only in all diseases of the body but also in the sicknesses of the animus, nay, even in the desires of the mind; in a word, in every change of the state of the corticals,—as is noticed especially from the unevenness of the respiration; but only the ultimate effect is called a disease. It is thus apparent how

†*qui circulum sanguinis toties* down] excites the blood, etc.
ad continuationem, — literally ‡The thoracic viscera.
 "which as often [as it comes

many are the diseases and how many the dangers into which the cerebrum alone and its will and sensation, or rather its inconstancies and changes, lead us. The universal cause of diseases, nay, of unhappiness and death, is that our will strives against the order of nature and opposes itself thereto.

CHAPTER XIII.

CATARRH AND RHEUMATISM.

553. *Catarrh* is a disease which, for the most part, takes its origin in the cerebrum; for the fact of there being a collection and inundation of some kind of enclosed humor, sluggish, stagnant, heavy, changing place and as it were worming about,—especially in the *sinciput*, and also elsewhere between the ethmoidal crest and the lateral processes of the *dura mater* which distinguish the cerebrum from the cerebellum,—is manifest to the sensation. Sometimes a dull pain is noticed, and also a sharp pain; this is followed by loss of sensation, especially of taste and smell, dullness, languidness, a doubting and hesitant determination of the will and actions, loss of memory, and many other effects which result from the blunting and dulling of the sharpness of the internal senses. After a time the pituitous matter usually begins to thin out and disperse, and to be eliminated to the outside by a number of paths according to the leading of the nerves. It is then generally called simply *rheumatism*.

554. *Catarrh*, properly speaking, is a collection, between the cerebral meninges,—*dura* and *pia*,—of a pituitous and mucous ichor secreted from the arteries of the *dura meninx* if not from those also of the *pia*. It is believed also to be present between the cortical windings, or under the *pia meninx*, and moreover in the interstices of the medullary substance. But *catarrhal lymph* does not penetrate so far; for that which is collected between the meninges is prevented from thus penetrating by the obstruction of the *arachnoid tunic*, and also by the *pia meninx*; such lymph, moreover, is too sluggish, being as it were a mucous. Meanwhile, the *dura*

mater which is an elastic and reactive suspensory, is continually stretched and relaxed as often as the cerebrum tumescs and detumescs. Thus the collected ichor is pressed and driven about, and, in fact, by the leading of the fabric, towards the cribriform plate; for every motion of the cerebrum tends and determines thither as to its fulcrum. Therefore the ichorous collections seek this place as their asylum,—which is the reason why they are wont to be constantly determined into the cavities of the nostrils. To prevent the stopping up of this pathway sneezing is usually excited, which is the forerunner of catarrh; for thus the wandering liquids are dispersed and the ways to the exits constructed by nature made plane. It is a known fact that innumerable fibrils of the olfactory nerve, surrounded by the pia meninx and also by the dura, pass through the foramina of the cribriform plate, and insinuate themselves into the cavities of the nostrils where they are disseminated throughout the mucous membrane. Between these two meninges little interstices continually open out into the foramina. It is true that in collapsed and dead brains these interstices are found stopped up, and indeed so stopped up that, according to the testimony of Vieussens, not a drop of injection could be forced through them.* But such is not the case in living and wakeful brains. When all the parts are expanded, erect and distinct; when, at the same time, they are in perennial reciprocal motion, and the very fibrils alternately compress themselves; then necessarily there must be open passage. Not only does experience confirm this, but it demonstrates it before the senses. Who

*Vieussens maintained that in the natural state no pituitous or mucous humor is collected between the dura and pia meninx. Among other arguments he adduces an experiment in which he injected some warm fluid between the meninges. Though the dura was swollen by the injection, yet the whole of the liquor was retained between the two meninges

although provision had been made for its escape through an incision in the dura mater above a ligature placed on the medulla spinalis. From this Vieussens argued that there could be no exoneration of any pituitous humor from the intermeningeal spaces, and consequently no collection of such humor in those spaces. (*De Cerebro*, Cap. XVI *ad. fin.*)

does not sensate the pituitous collection from its very weight? from the pressure and pain? and from the actual flow through the nostrils and throat? Add to this that there is no path of exoneration other than into the nostrils or into the nerves from the cerebrum. The existence of both these paths is also proved by experience. The cranium itself is everywhere impervious, nor is there any opening except for the arteries, veins and nerves. The same is the case also with the dura mater. If veins are to absorb this humor, none are found except such as are thrown towards the sinuses of the dura mater. In this catarrhal state of the cerebrum the coarse meninx is for the most part slightly relaxed, and sometimes also thickened; and, by reason of the interjacent moisture, it presses upon the subjacent arachnoid tunic and pia mater. Thus, with the cerebrum carrying on its diastoles and systoles, the liquor is most certainly driven around, and this naturally, as was said, in the direction of the cribriform plate, or else also towards the other corners of the cranium where the nerves have their exit, and where the fascicles of fibres unite together under a common sheath, namely, the dura mater. Thus this dissolved mucosity may also be derived towards the nerves,—but this path is a deviation. Consequently, according as the condition and mind (*animus*) of the cerebrum carries this humor, so it is determined either to the motor nerves of the eye, or also to the third, fourth, and fifth pair of the head,† or to the auditory nerves, or the gustatory; thus to the ears, tongue, gums, cheek-bones, face; nay, also to the shoulders, arms, hips, and other parts of the chest, thorax, or abdomen; that is to say, to wherever the nearest or more open path has led it. It is likewise determined towards the medulla spinalis; for at the posterior part of the great foramen of the occiput, a passage opens between the pia and dura mater and afterwards, according to the connection of the

†These are, the oculomotor (3d), the trochlear or patheticus (4th), and the trigeminal (5th). The first two are motor nerves to

the muscles of the eye, and the third includes the motor nerves of the jaws and the nerves of common sensation of the face.

same causes, between the fascicles of fibres going out from the spine; consequently a similar wave is derived through the nerves into every quarter and part of the body. If it passes through the great intercostal nerve immediately into the texture of the lungs it gives rise to *suffocating catarrh*,* which is also called *cardiac syncope*,—since the epiglottis and trachea are closed. But if it goes to the costal and other thoracic muscles the inspiration labors,—as in *paraphrenitis* [cf. n. 516]. If it goes towards the loins it is called *rheumatic lumbago*; if to the hip, *coxict* or *sciatic rheumatism*. The difficulty of moving oneself is called the *sciatic pain*, which is a kind of formication‡ pricking the senses. Thus, according to the parts to which this lymph is determined, the disease receives its name, and becomes more or less dangerous. The inundation especially reaches the glands, such as the parotid, the throat-glands and others; also the ganglia, wherein a number of nerves come together; hence results hoarseness of the voice or *aphonia*.* Nay, when such an ichor is determined in any one direction two or three times, it afterwards presses along that path as though the same had been made open and plane. Especially is it important to observe the quality and quantity of the ichor; also the sensibility of the part into which it flows, whether, for instance, the fibres flowing into the membranes and muscles be fibres of the cerebrum or fibres of the cerebellum. With the help of anatomy this is ascertained with considerable accuracy from the seat, quality, and quantity of the disease, pain, and danger.

555. The causes of the secretions and of the catarrhal flow between the meninges of the cerebrum are many in number. The proximate cause is from the arteries of the dura mater, and perhaps also from its other filaments; for when compressed, the dura mater continually distills a mucous. It

*Defined by Blancart as “the highest degree of dyspnœa, or a sudden intercepting of the respiration accompanied with redness of the face and stertor.”

†From the Latin *coxa*, a hip.

‡*Formicatio*, from *formica*, an ant. The word is used to indicate a pain or irritation such as would be caused by ants creeping over the affected part.

*Complete loss of voice.

does not seem probable that the secretion comes from the arteries of the pia meninx; for these creep in the duplicature of the meninx and their sweat is at once led off to between the folds of the cerebrum. The causes of the secretions, however, are obstructions and inflammations; to wit: *In the body*, obstructions of the accustomed evacuations, as through the bowels, the womb, sweating, effluvia, hemorrhoids; for the fact of the retention causes that the serosities must be unloaded somewhere. But the causes of the obstructions are many in number, being especially the temperament, the animus, changes of the air, of cold and heat, of food and drink; especially when such changes occur in those members that are approached by many fibres of the cerebrum, such as the soles of the feet and the muscles of the occiput. Also *in the cranium itself*, for cold also penetrates the pores and sutures of the cranium and closes the communicating passages and the veins themselves,—a large number of which pass out through the sutures and in other places; thus the paths of exoneration for the vessels and threads of the dura mater are entirely stopped up. Causes are also met with *in the cerebrum*, as, for instance, too great compression of the arteries of the meninx; denial to them of exoneration through the nostrils; excessive somnolence and carelessness,* excessive remission of the animus and mind and also excessive intension; for remission results in the cruder parts being drawn up towards the cerebrum, and intension, in the exits through the sutures of the cranium and into the veins being closed.

556. There are many kinds of catarrhs, for they are as many as are the determinations into glands, muscles, sensory organs, members and viscera of the body; and especially, as are the kinds of serosity in the blood. The serum draws its nature from ordinary food, being that which is taken in by the mouth and carried into the stomach; from atmospheric food which is drawn in by the respiration and which passes into the veins by means of the cuticles; and from a still purer food

**Incuria*. The meaning seems to be excessive indifference as to the affairs of life, including one's own work.

which transpires through the most subtle pores. The red blood and the purer blood is impregnated by all these foods. There are foods, exhalations and vapors which are less or more suitable to the blood and thus dangerous and deadly. When foods of this kind defile the serum, then, by the striving and urging of the whole brain and body, they are rejected and expelled as though enemies. Hence a conflict arises, and there is a struggle for the arena, vessel or blood. From this cause also a secretion arises, and thence a more malignant catarrh or rheumatism, which, when it breaks out, is more painful giving rise to excruciating pains and tormina.† This is the reason why the catarrh of one region is more dangerous than that of another; nay, it is often the case that one kind of catarrh prevails during a set time and attacks those with whose blood it disagrees. For exhalations,—some exceedingly subtle,—will arise from a certain part of the earth's bosom, from the ocean, from clouds, from pestiferous diseases, or from change of seasons; and these infect the air or ether, and thus the atmospheric food just mentioned.

RHEUMATISM.

557. The name rheumatism is also given to a disease that severely attacks the membranes, tendons and joints of the bones; for it consists of a collection of an acrid lymph mingled with heterogenous substances and not suitable to the fibres of the membrane, tendon or joint. The special seats of invasions are the hollows of the knee, the knees, loins and other ginglymoid joints,* nay, and also the softer substances; hence arise tumors, redness, indurations, frictions as when axles and wheels creak from not being greased with the proper oil or from being greased with some other kind; hence difficulty in bending the joints, excruciating pain and many other symptoms,—all of which spring not from the brain but from some

†The word is technically used to describe pains resulting from contraction, such as the pains before and after labor, of dysentery, colic.

*A ginglymoid joint or articulation is one that permits motion on a single axis approximately transverse to the long axis of the bone.

other source. In the whole body there exists no joint, socket, symphysis, periosteum, or tendon that does not demand its own kind of humor; for in each case there are glands near by, which prepare and proffer it. If such humor be either defiled or illegitimate it sticks, ulcerates the fibres and deprives the member of the faculty of action; hence come painful results and so forth.

558. The usual cause is food, taken in through the mouth or admitted through the pores, that is hostile to the blood; consequently poisons and malign conditions of the air; the inhibition of the perspiration, circulation, or evacuation; especially if the food is imbibed with open pores, as in heat, and then retained by reason of the pores being suddenly closed, as in cold,—in which case it suddenly makes an attack as it were, and widely scatters its infections. Causes of this atrocious disease are also the congenital beginnings of diseases, which, if they do not break out openly, inaugurate the disease with some fever and a slow inflammation; intermittent fever cured before its time; high fever not thoroughly wiped out; the venereal disease not yet come forth; unfermented wines, certain kinds of drugs, and infinite other things. But if a stagnant lymph of this kind turns to pus it then corrodes and lacerates the bony matter, periosteum and tendons and, consuming them, causes the most atrocious pain, as in arthritis. Ordinary rheumatism, however, is that disease which takes its origin from the catarrh described above, that is, from a lymph collected between the meninges of the cerebrum.

CHAPTER XIV.

CEPHALALGIA, CEPHALEA, MIGRANIA, OVUM, CLAVUS.

559. Headache is either dull or acute; sometimes an agitation and a kind of palpitation is noticed. Thus headache varies according to its causes. When it affects the whole head it is called *cephalalgia*, and, if long enduring, *cephalea*; if it affects only half the head it is called *migrania*, if only some portion, *ovum*, and if only a minute part, *clavus*.

560. Either the whole cerebrum is affected with cephalalgia, or one of its hemispheres, or one convolution, or some special cortical bed; for the cerebrum is as it were articulated so that one portion may be sick while the other parts remain whole. The seat of the ill, according to its causes, is either in the cranium, or in the dura or pia mater, or in the cortical substance itself, or in the medullary substance. For instance, when a contused or fractured cranium presses upon the dura mater; when the cavities of the cranium are obliterated and the diploe* is forced out; if the dura mater is anywhere torn away from the bony wall of its cranium,—for the dura mater is attached to the cranium at various points as though by bonds; if the vessels penetrating into the cranium and its sutures, together with the other threads, be too stretched, relaxed, twisted together, ruptured, so that passage through them is denied; if an ichor be collected between the cranium and the mater whence result pittings and cavities; if there be an abundance of humor between the meninges, or between the windings and folds of the cortical substance; between the lamellæ and plexuses of the medullary substance; if the humor in the ventricles be stagnant from the occlusion of its exits, of which latter there are many, to wit, a separate one for each kind of humor,—for there are as many paths of exoneration as there are species of liquor; moreover, if cruor be crammed in the arteries, veins or sinuses and thus the cerebrum be somewhere inflamed,—for its health requires a moderate tempering of cold and heat. On this account *cephalgia* is distinguished into *hot* and *cold*; and by some into *scorbutic*, *bilious*, and *pituitous*. In addition there is also *habitual* or *congenital* headache, not to mention headache arising from some enclosed matter that is purulent or stale; from scirrhus growths; from hydatids; from the erosion of the parts. Moreover in the medullary part of the brain there are everywhere found receptacles or asylums of the blood and if these are obstructed this also causes the brain to ache.

*The cellular structure between of the cranium.
the inner and outer bony plates

In addition, there are the larger and lesser plexuses, and the various interstices between the layers of fibres; if these coalesce, dry up, expand, or become flaccid, they are disturbed from their natural position; thus headache arises from atrophy, atony, or ataxia; likewise if turgescence occurs in the glands that are interwoven [with the medullary substance] in order to restore the tension. There is nothing more sensitive than the cerebrum,—but thus, there is nothing more distinct; hence in such distinctions lies common sensation, grievous sensation, cephalalgia, and pain.*

561. The several diseases of the head are usually preceded by a certain symptomatic pain, as in the case of apoplexy, epilepsy, hydrocephalus, catarrh, fever and so forth. But ordinary cephalalgia usually arises from all causes that induce a change of state upon the cerebrum, inhibit the alternations of its animation, compress the whole or a part, and that irritate and prick the sensitive threads of the meninges and of the cortical and medullary substance. The cerebrum is wont to be vehemently straitened, carried away, and pained by malignant fumes and stenches, by foul vapors, and still more by pestilential contagions and poisons. For when these attack the blood and humors, including the purer humors, the cerebrum strives with all its breath and forces to expel them, and restore itself to its own natural state;

**Inde communis sensus et gravis et cephalalgia dolorque talibus.* Of the word *dolorque*, Dr. Wilkinson, the Latin editor, writes that he so reads the word "more by using guesswork than by attaining certainty." It "is written in a most difficult style, and the sense throws little light upon the matter." We may add that in the chapter on cephalalgia at the end of the MS. work on the Diseases of the Brain (*Photo. MSS.*, vol. V, i, p. 625) there is a passage which seems to elucidate

the matter. Translated, the passage reads: "There is nothing more sensitive than the cerebrum, but its sensibilities or the degrees thereof are like the degrees of the compositions. It is apparent from reason that the pain of headache is not a distinct affection of the single parts deeply subdivided, but of many parts together, that is, of compounds, and therefore an obscure or obtuse affection is merely their extrinsic compression."

and as long as this endeavor continues it creates a pain frequently of an atrocious character, and this with increase as it carries itself over its balance and limit. The effect of foul odors is taught by experience. They effect the cerebrum according to the whole nature of their action. There are some that soothe and put to sleep; some that convulse the whole cerebrum and excite to sneezing; some that produce disturbance, and, with horror, bring also to the fibres discord, as it were; for the fibres of the olfactory nerves communicate with all the fibres of the cerebrum. But to resume. The causes of cephalalgia are also varied according to temperaments. In the full-blooded and plethoric the pain is usually excited by inflammation; in the phlegmatic by drying up; in the choleric by privation of the stimulating parts and thus from lack of a mildish bile; so also in the other cases.

CHAPTER XV.

HYDROPS, HYDROCELE, HYDROCEPHALUS, ASCITES, TYMPHANITIS, LEUCOPHLEGMATIA, ANASARCA, HYPOSARCA.*

(Here the MS. ends.)

*Hydrops or dropsy is the generic term, the other terms indicate the seat of the dropsy, namely, dropsy of the scrotum or testicles; of the brain; of the

abdomen, etc.; of the same when distended by air; of the whole flesh (2); of the same when the humor is specially viscid.

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NOTES BY THE EDITOR.

We must apologize to our readers for the long delay in the appearance of this number of the NEW PHILOSOPHY. For one reason, at any rate, we do not regret it, in that it enables us to put on earlier record the deep sense of loss felt by the Directors of the SWEDENBORG SCIENTIFIC ASSOCIATION, in common with all the members, in the death of Dr. Sewall. He has been President of the ASSOCIATION since its foundation in 1898, and his presence, his guidance, his work, will all be greatly missed.

Dr. Sewall's passage into the spiritual world at the close and winter of the year is beautifully typical of the close of a long life of usefulness in the world of time which is the Winter that ushers in the Spring of eternal life. He has left the field of work that lies on earth, but he still continues in the affection and zeal that inspired the work. It is for us who still remain in the earthly field to go steadfastly on with the work, that we may continue to coöperate with those who, though now unseen, are still with us.

It is but natural that the loss of one who contributed so signally as did Dr. Sewall to the use for which we stand, should cause some discouragement; but truer and more human reflection will bring the conviction that the noblest monument we can raise to the memory of our late President, is, not to slacken the work to which he was devoted, but rather to increase it. Dr. Sewall pursued that work under many discouragements. He saw,—more clearly during recent years,—

that a rational philosophy which is truly spiritual and acknowledging of the Divine Love and Wisdom, is difficult of establishment in the world of to-day when ears are ill-attuned to the harmony of a philosophy that bears witness to the Lord's presence in creation. But from conviction of the necessity of this spiritual philosophy; from intelligent grasp of the fact that it is to be found only in the works of Swedenborg; from a growing intuition that the Writings of the New Church are supported, illustrated, given ultimate and firm foundation only in the philosophical works,—from all this, he continued despite discouragement. Let us also not be disheartened now that we suffer what seems so great a loss. It is easy and human to falter; it is noble and spiritual to continue firm in the pursuit of an end dictated by enlightened reason and inspired by the desire to proclaim that the Lord is the God of earth as well as of heaven.

APPRECIATION OF DR. SEWALL.

The large place occupied by Dr. Sewall in varied fields of work, the many uses that he performed, and the genuine friendship and affection that he inspired in those who knew him are eloquently set forth in the *NEW CHURCH MESSENGER* of January 19, which is entirely given up to commemorating his life and labors.

Among the many expressions of appreciation that appear in this issue we quote the following from the pen of Professor Hite, one of our oldest members:

DR. SEWALL'S SERVICES IN THE AMERICAN SWEDENBORG SCIENTIFIC ASSOCIATION.

The invitation to share in the Memorials to the Rev. Frank Sewall in this *MESSENGER* is a most welcome opportunity to speak from the cherished memories of a long standing personal affection and esteem.

When I went to Urbana in 1884 I found in President Sewall a sympathetic, generous and appreciative colleague and official superior. Throughout the whole period that has since elapsed I was closely associated with him in personal and professional relations. The more intimately I became acquainted with him the closer I was drawn to him in affection and admiration. His friendship was a support and an inspiration to me which it would be hard to overestimate. I cannot

on this occasion attempt to appreciate his work in general, either in the church or in the community. His varied talents and his exhaustless energy made him prominent in many fields of activity. His literary tastes and pursuits led him to find recreation in history and particularly in the history of philosophy.

It was his broad interest in the philosophical aspects of New Church history and of New Church activity that led to his election as first president of the American Swedenborg Scientific Association, and he was thereafter re-elected annually. His presidential addresses were notable contributions to various phases of the work of the Association and were always characterized by a spirit of broad enthusiasm and perennial optimism.

It is a temptation to particularize some of these addresses and dwell on their literary and historical value, but space is lacking. It may be said in general that Doctor Sewall was a splendid representative of the New Church spirit and life in all the directions of his activity, and this was especially true of his position in the movement which found its field of accomplishment in the work of the American Swedenborg Scientific Association.

PUBLICATION NOTES.

We call the special attention of our readers to the announcements in our advertising pages. By the liberal generosity of the LONDON SWEDENBORG SOCIETY, the ACADEMY OF THE NEW CHURCH, the ROTCH TRUSTEES, the AMERICAN SWEDENBORG SOCIETY and MESSRS. BOERICKE & TAFEL, we are now enabled to offer to our members at half price, not only our own publications of Swedenborg's philosophical works, but also those published by other bodies. Our acknowledgments are due to these publishing houses for their liberal coöperation with the aims of the SWEDENBORG SCIENTIFIC ASSOCIATION in extending the knowledge of Swedenborg's philosophy. The practical acknowledgment will consist in our members availing themselves of this coöperation.

In regard to the work on the SENSES which is now published in bound form with Indexes, all who have purchased the work in paper binding without the indexes, may exchange their copies for bound copies complete with indexes, if they will return their paper-bound copies, in good condition, together with

\$1.00, or, if members of the SWEDENBORG SCIENTIFIC ASSOCIATION, 50 cents. Address, C. E. Doering, Bryn Athyn, Pa.

PLANS FOR THE COMING YEAR.

In this issue we print the first part of the ninth (and last) of the *PHYSIOLOGICAL PAPERS* by MISS LILLIAN G. BEEKMAN. The conclusion will be printed in our issue for April. There will still remain, however, some charts setting forth in parallel tables the teachings of various of the philosophical and theological writings of Swedenborg. These will be printed in the near future.

Now that the Senses and the Fibre are completed, it devolves upon the Editor of the *NEW PHILOSOPHY*, acting in accordance with the settled policy of the Association, to provide for the printing in our pages of some one or more of Swedenborg's philosophical or scientific works. We propose therefore to commence in our next issue a new translation of the collection of works usually known as the *POSTHUMOUS TRACTS* and whose subject is mainly the Human Blood and the Human Soul. The titles of these little works are: *The Way to a Knowledge of the Soul*; *Faith and Good Works*; *the Red Blood*; *the Animal Spirit*; *Sensation*; *the Origin and Propagation of the Soul*; *Action*; *the Soul*. These works were all published serially in English translation by the *SWEDENBORG ASSOCIATION* over 60 years ago, but they are now so scarce as to be practically unobtainable.

In addition we hope that we shall be able to print, as a pleasing variety from the physiological works, small installments of the *SELECTAE SENTENTIAE*. This little thesis was written by Swedenborg in his 21st year. It consists of selected sentences from the philosopher Seneca with comments gathered by and added to by the youthful author. The work is of especial interest as showing the early bent of Swedenborg's mind to the consideration of philosophy, besides giving some inkling of his later doctrines. It has never before been translated, and will be a valuable addition to the student's library.

MEMORIAL TO DR. SEWALL.

At a meeting of the Board of Directors of the SWEDENBORG SCIENTIFIC ASSOCIATION, attended by Dr. Boericke, Vice-President, and Messrs. Acton, Brown, Doering and Whittemore, the following IN MEMORIAM was unanimously adopted by a rising vote; and it was ordered that a copy of the same be sent to Mrs. Sewall and be printed in the NEW PHILOSOPHY:

IN MEMORIAM.

FRANK SEWALL, D. D.

Born September 24, 1837; died December 7th, 1915.

We are but expressing the spontaneous feeling of all the members of our Association when we say that the death of Dr. Sewall comes to us with a sense of great loss and with a feeling of increased appreciation of all that his devotion has meant to us. As for the loss, we know it is but apparent, for in the spiritual world Dr. Sewall still continues his active interest in the advancement of true philosophy; and his strengthening of the spheres of those greater lovers of wisdom who have preceded him and with whom he is now associated cannot but have a great though unseen influence on the growth of the work to which during the years of his earthly life he was so greatly devoted.

The Founder of our Association some seventeen years ago, and its President from then until the day of his death, Dr. Sewall has performed a service to the study and spread of Swedenborg's philosophy, the greatness of which can perhaps hardly be justly estimated in this day of small things.

As a fruit of this devotion we enjoy a more easy access to Swedenborg's philosophical writings, and there is a more widespread knowledge and appreciation of their teachings. The work will continue, and in future years those who enter more fully into the fruits of this work will gratefully remember and more justly estimate the services and the influence of our honored President.

At a time when a certain unrest was manifested among students of Swedenborg,—a desire, felt by men of different New Church affiliations to come together, and, in common effort, manifest their mutual interest in the philosophical works of Swedenborg; a desire to spread a knowledge of these works; a desire also to mark their willingness to work together with all who had this cause at heart, whatsoever their doctrinal differences,—at such a time Dr. Sewall was the one man to whom, as to a head and centre, a movement that should satisfy this desire, could look for its successful fruition. Broad of learning, catholic in taste, deeply imbued with the philosophical spirit, highly and widely esteemed by men of various views, and firmly convinced of the truth of Swedenborg's philosophy, he was spontaneously chosen as the first President of the SWEDENBORG SCIENTIFIC ASSOCIATION which was then founded; and throughout all the years of his presidency this spontaneity has never abated.

We value his work; we cannot but feel the sorrow of his loss; but it is for us to go on; and in no better way can we set up a memorial to our late President than in furthering the work to which he was devoted,—the publication and spread of Swedenborg's philosophical writings, and the bringing together for their study, men of many minds but inspired, as was Dr. Sewall himself with the desire for the cultivation and growth of a rational and spiritual philosophy.

THE WORK OF THE SWEDENBORG SCIENTIFIC ASSOCIATION.

A REVIEW BY THE EDITOR.

At this close of Dr. Sewall's presidency of the SWEDENBORG SCIENTIFIC ASSOCIATION it would seem appropriate to briefly review the work of the Association during the seventeen years that have elapsed since its foundation. Considerations of space as well as other considerations, compel us to confine this review to the work done in furtherance of the first object of the Association, namely, the Preservation, Translation, and Publication of the Scientific and Philosophical works of

Emanuel Swedenborg. This work indeed is an essential preliminary to the accomplishment of the second object of the Association,—the promotion of the principles taught in Swedenborg's works. The Association has by no means been inactive in this latter respect, but its main efforts have been directed to placing the works themselves in the hands of its members and others.

The necessity of this preliminary work was fully recognized at the very inception of the Association, and is set forth in a "Call to form a Swedenborg Scientific Association" issued by Dr. Sewall on March 9th, 1898, in the *NEW CHURCH MESSENGER* and *NEW CHURCH LIFE*, and afterwards published in the first issue of the *NEW PHILOSOPHY*:

"The measures adopted at the last meeting of the Convention looking to the republication of Swedenborg's *Principia* (so reads, in part, this Call) is only one of the numerous indications of a reawakened interest, in many quarters in and out of the Church, in the scientific and philosophical writings of Swedenborg, and of a desire to have those which are now out of print republished, and those which have never been published, now translated and given to the world.

"The extraordinary value of these writings and their important bearings on the science of today and of the future, have been established by high scientific authority. . . . Among New Churchmen there is also a growing conviction of the need of a more thorough acquaintance with Swedenborg's own science and philosophy, in order to truly understand the meaning of the terms he uses in his theology, and also of the great service to be rendered to the science and philosophy of today by a clear showing of the harmonious relations that must exist between a true science and a true theology, in accordance with Swedenborg's statement in the work on 'Influx,' that from a philosopher he became a theologian, even as the Apostles were taken from fishermen, 'since a fisherman spiritually is one who investigates and teaches natural truths and afterwards spiritual truths in a rational manner.'

"Recognizing the fact that it is unworthy of a true appreciation of Swedenborg's teachings to allow his great philosophic and scientific writings to remain unpublished or to pass out of print, a number of persons, both of the ministry and the laity, including scientific scholars and professors, and connected with both the Academy of the New Church and the General Convention, have expressed the wish that there might be organized independently of nationality of any of the existing ecclesiastical bodies of the Church, a 'Swedenborg Scientific Association' having for its object 'the translation and publication

of the scientific and philosophical writings of Swedenborg and the study and discussion of the principles laid down therein.' It is thought that upon the broad basis of this important use many will gladly unite in cordial co-operation who have for various reasons acted apart in their ecclesiastical affiliations, that our brethren in England will respond, and that the Church in every section will feel the benefit of this reunion and will rejoice in the work it may be enabled to perform."

At the first meeting, held in New York on May, 1898, in pursuance of this Call, Dr. Sewall, the presiding officer, more fully outlined the uses of the proposed Association. He closed his Address with the words :

"With so high and delightful a mission before us, it will be impossible for us to enter upon its several duties without a devout sense of gratitude to the merciful providence of the Lord that has enabled us to conceive and inaugurate this enterprise, and without the desire to implore upon its beginning and progress the Divine favor and benediction. Therefore, let us look to Him 'of whose glory all the earth is full.'"

This Address was "followed by a brief prayer for the Divine guidance and blessing, concluding with the Lord's prayer, in which all joined."

With this auspicious beginning the SWEDENBORG SCIENTIFIC ASSOCIATION started its life of usefulness the fruits of which we now enjoy, and whose work, we trust, will be long continued.

At the time Dr. Sewall's Call was issued there were available to the English reader, only a very few of Swedenborg's writings, namely, *The Infinite*, *The Brain* (2 volumes only), *Economy of the Animal Kingdom*, *The Soul*, and *Worship and Love of God* (parts I and II only).

It was indeed possible, at rare intervals, to procure second-hand copies of other works, namely, *CHEMISTRY*, *MISCELLANEOUS OBSERVATIONS*, *PRINCIPIA*, *POSTHUMOUS TRACTS*, *GENERATION*, *ANIMAL KINGDOM* and *HIEROGLYPHIC KEY*; but the opportunities to procure these works were so rare, and the price so great, that they may be said to be practically unobtainable.

After seventeen years of labor, the SWEDENBORG SCIENTIFIC ASSOCIATION, as compared with the SWEDENBORG ASSOCIATION of the 40's, has not very much to boast of in the publication of Swedenborg's writings. The work accomplished by the latter Association in the publication of Latin and English texts of Swedenborg, was truly remarkable, and it was rendered possible by the enterprise and energy of a few learned and wealthy Englishmen. Although it might have been expected that with the growth of the New Church in this country and in England, the work thus energetically begun would have continued and increased, yet since the time of the SWEDENBORG ASSOCIATION no concerted effort was made in this direction until the formation of the SWEDENBORG SCIENTIFIC ASSOCIATION some sixty years later.

The first work taken up by the SWEDENBORG SCIENTIFIC ASSOCIATION was the prosecution of a new edition of the PRINCIPIA. The efforts of the Association bore fruit in 1913 when the LONDON SWEDENBORG SOCIETY published two volumes which included not only the PRINCIPIA, but also the hitherto unpublished POSTHUMOUS (or Lesser) PRINCIPIA, the SUMMARY OF THE PRINCIPIA, and sundry notes by the author. It is true that this edition was subsequently withdrawn owing to imperfections, but it still remains as the manifestation of our first effort to spread a knowledge of Swedenborg's philosophy. We understand, moreover, that the revision of the work is now under way, and that in the near future we may expect its appearance in acceptable form.

The second work to which the Association devoted its energies was the WORSHIP AND LOVE OF GOD. Theretofore, only Parts I and II of this work had been available to the reader,—the Parts, namely, that were published by Swedenborg himself. But it was known that the author had commenced the printing of Part III. The proof-sheets of this commencement of the concluding section of the work were found among Swedenborg's MSS. together with a manuscript continuation, and it was the desire of the Association that a new edition of the work should be published to include this new material. A new translation was at once undertaken under the auspices of

the Association. Interruptions, owing to various causes, greatly delayed the completion of the work, so that it was not till more than fifteen years after the work was first undertaken, that the early efforts of the Association bore fruition. Now, however, in the edition published by the MASSACHUSETTS NEW CHURCH UNION, the work is available to the English reader practically complete so far as its author completed it. This edition,—which is entirely owing to the work of the SWEDENBORG SCIENTIFIC ASSOCIATION supported by the generosity of the ROTCH TRUSTEES,—also includes the marginal notes made by Swedenborg on his copy of Part I, and which have never before been published.

Another large work undertaken in the early days was the translation of Swedenborg's first draft of Part III of the ANIMAL KINGDOM,—the Part, namely, that treats of the SENSES. The commencement of this third Part was published by the author in 1745, but it was not complete, since it treated only of the senses of touch and taste. The author's plan was to go from touch, the ultimate and most universal sense, to sight which is the highest of the senses. But it does not appear that he ever prepared for the press the parts on Smell, Hearing and Sight. A first draft of the whole work on the five senses was however found among his MSS. A part of the Latin text of this draft was published by Dr. Im. Tafel, and it was this work, together with the parts omitted by Dr. Tafel, but photolithographed by his learned nephew, Dr. R. L. Tafel, that the Association undertook to translate and publish. The work was commenced serially in the NEW PHILOSOPHY for October, 1900, and was continued until its completion in 1914.

In the meantime, while waiting for the fruition of these its earliest efforts, the SWEDENBORG SCIENTIFIC ASSOCIATION bestirred itself in translations which would become more immediately available to the reader in book form. As a result there were published from time to time in the NEW PHILOSOPHY several of the earlier works of Swedenborg,—works which were known to the student, if known at all, only by their titles. None of them had been previously published

either in original text or in translation, and they existed only in manuscript or in photolithographed reproduction. In every case the translations were made from the photolithographs. These works, of which we give a list below, not only throw interesting, and indeed essential, light on the development of Swedenborg's philosophy, but they also add to our understanding of that philosophy itself.

Published from time to time in the *NEW PHILOSOPHY* from 1898 to 1906, these works, together with some other works of the same nature specially translated for the purpose, were published by the Association as three Parts of a work entitled *SCIENTIFIC AND PHILOSOPHICAL TREATISES OF EMANUEL SWEDENBORG*,—one part published in 1905, and two parts bound in one, in 1908. About the same time the Association published its translation of the *SUMMARY OF THE PRINCIPIA*,—a work which had never before been printed except in the pages of the *NEW PHILOSOPHY*.

While the Association had thus been promoting the publication of Swedenborg's writings by translations in the *NEW PHILOSOPHY*, that journal was nevertheless mainly devoted to articles and studies on Swedenborg's philosophy. In 1900, however, the increased conviction as to the necessity of furnishing the student with Swedenborg's own writings led the Association to institute the policy, advocated in 1903 by the then editor of the *NEW PHILOSOPHY*, of devoting the pages of that magazine more fully to the printing of new translations.

The effect of this change of policy was at once seen in the expediting of the translation of the *SENSES*. Whereas, from the commencement of the work in 1890 to 1900, there were printed 162 pages of the work, from July, 1906, to July, 1912, the remaining 176 pages were completed. At the old rate of progress the work would not have been completed till July, 1919! As it is the work was issued in book-form in 1914 as an advance publication. It has now been furnished with a complete index, and, as will be seen in our advertising pages, is now published complete in bound copies.

Concurrently with the change of policy noted above, the Association commenced the publication of another of the import-

ant untranslated works by Swedenborg, namely, the *FIBRE*. This work of over 400 pages, included the important sections on the Doctrine of Forms and Diseases of the Fibre, is now completed, and will be put on the market as soon as an Index, plates, and some other additional matter now under way is finished.

A less ambitious publication by the Association, but none the less of great interest, is the little work or pamphlet on the *FLYING MACHINE*, (1910, pp.15.), which has attracted some notice in the aeronautical world.

In addition to the work of translation the Association, early in its history, also turned its attention to the publication of the original texts of the philosophical MSS. by Swedenborg which were still unpublished. A plan for the prosecution of this work was prepared by the treasurer of the Association, Mr. Asplundh, and was read before the Association at its annual meeting in 1901. Mr. Asplundh showed that there were about 2,500 MS. pages of such writings, and he proposed that these should be copied by hand with a view to their publication; for while it would be better to have them phototyped, yet the expense would stand in the way of this being done for a great many years. The cost of the entire work including the printing, was estimated at \$1,600, and Mr. Asplundh outlined a plan which contemplated the coöperation of the LONDON SWEDENBORG SOCIETY, the GENERAL CONVENTION and the ACADEMY OF THE NEW CHURCH, by which this sum could be raised.

The plan was heartily endorsed by the Association, and in the same year, 1901, it was laid before the three bodies referred to, with a request for their coöperation. The Convention and the Academy signified their support of the plan by a generous contribution of \$300 each, and subsequently the ROTCH TRUSTEES contributed \$100 for the same purpose. The work of transcribing was at once set on foot. In Miss Greta Ekelof, assistant librarian in the library of the ROYAL ACADEMY OF SCIENCES of Stockholm, the Association secured a copyist of the highest ability. Moreover most of Miss Ekelof's work was subsequently compared with the original by Mr. A.

H. Stroh who carefully noted the minutest points of the manuscript copied. The whole work of copying was completed in the Spring of 1903 when the committee in charge reported to the Association that the copying had included 11 of Swedenborg's MSS., comprising 2,750 pp.

In further continuance of this undertaking the Association at once set about the printing of one of these works, the work chosen (De Sale) being the first and only MSS. that had been forwarded from Sweden,—the remainder being left there for comparison with the original by Mr. Stroh. Owing to various delays the printing of this MS. on Salt was not completed till 1910. In that year, however, the work *DE SALE* (167 pp.) was published by the Association as the first public fruits of the plan originated and so vigorously pushed by our energetic treasurer. The remaining MSS. are in the archives of the Association and it is hoped that the time will not be far distant when the Association will have the means to publish them.

Another mark of the activity of the *SWEDENBORG SCIENTIFIC ASSOCIATION* was the appointment in 1898 of a committee to transcribe and edit the *POSTHUMOUS* (or *Lesser*) *PRINCIPIA* from the pages of the photolithographed manuscript. In 1903 this work was completed and the transcript was placed in the hands of the Association. A committee was then appointed to translate the work with a view to its publication. The translation was, however, not carried very far, and subsequently, with the appearance of the *LONDON SWEDENBORG SOCIETY'S* edition of the *PRINCIPIA*, it was abandoned. The Latin transcript, however, was used in editing and publishing the Latin edition of this work to be noted below.

In addition to the transcripts we have mentioned, the Association has also in its Archives transcripts of over 96 manuscript pages made from the Photolithographs, and all of which, with one exception, have been carefully compared by Mr. Stroh with the original MSS. in Stockholm.

To the above must also be added translations made by committees of the Association of the whole of the *DÆDALUS HYPERBOREUS*,—a scientific journal of which Swedenborg was the editor and main contributor, and which comprises about 165

printed pages,—and an early work on Algebra comprising about 135 pages. These translations are now in the possession of the ACADEMY OF THE NEW CHURCH, but are available for the use of the Association at any time.

In 1907 the Association printed a zincotype reproduction of the Catalogue of Swedenborg's Library (16 pp.),—a pamphlet which has proved of exceeding value to students of Swedenborg's philosophy in respect to the scientific data by which that philosophy was confirmed by its author.

Up to now we have spoken of the work done by the SWEDENBORG SCIENTIFIC ASSOCIATION directly. But there is other and most important work, which, while not formally done by the Association officially, yet owes its inception to the energy and work of that body; and in which the work of transcription and translation has been done either by committees appointed by the Association or by active members of that body. We have already referred to the WORSHIP AND LOVE OF GOD which comes under this head, and which now happily is available to the student.

The first of these works was the little treatise on TREMULATION translated by Professor ODHNER and published for the ROTCH TRUSTEES by the MASSACHUSETTS NEW CHURCH UNION in 1899. This work, which gives the first inklings of that deep philosophy which peculiarly distinguishes Swedenborg, was translated from the original Swedish as it appears in the photolithographed manuscript, and had never before been published in any form.

Two years later (1901) there was published under the same auspices, the little work on ONTOLOGY, the "last of the philosophical works" of its author, translated by Professor ACTON. This was the second edition of this little treatise, but it was so thoroughly revised from the photolithographed manuscript as to constitute practically an entirely new translation. The Latin transcript made at the time by Professor ACTON has also been placed in the archives of the Association.

To Professor ACTON is also due the translation of the HISTORY OF CREATION (56 pp.), published by the ACADEMY OF THE NEW CHURCH in 1913; and the translation of the work

on *GENERATION*, published by BOERICKE & TAFEL in 1912. The latter is one of the principal of Swedenborg's philosophical writings and although it had been translated by Dr. Wilkinson under the auspices of the SWEDENBORG ASSOCIATION, yet it had become so rare as to be practically inaccessible. The leading member of the firm that published this second edition, is the Vice-President of the SWEDENBORG SCIENTIFIC ASSOCIATION, and the publication was undertaken in direct furtherance of the objects of the Association.

To this roll of accomplishments must also be added the works edited by Mr. Stroh and published by the ROYAL ACADEMY OF SCIENCES of Stockholm,—works whose publication is due very largely to the activity of the Association, represented by Mr. Stroh, in the securing of the publication of the philosophical works. As a result of Mr. Stroh's sojourn in Stockholm, the ROYAL ACADEMY OF SCIENCES instituted in 1907, its superb edition of the *OPERA OMNIA* of Swedenborg, in the original texts. Thus far three volumes of this series have been published, for which the Association collected subscriptions amounting to about \$500. The contents of these publications, the magnificent execution of which has whetted our appetite for the appearance of the remainder of the series, will be noted below. We need mention here only the leading works, namely, Swedenborg's *Scientific Correspondence*, *Miscellaneous Observations*, *Chemistry* and the *Posthumous (or Lesser) Principia*.

Under the same heading, though not in the same degree,—for the works now to be noted owe their inception mainly to causes outside the SWEDENBORG SCIENTIFIC ASSOCIATION, except so far as that body was represented by the enterprising and untiring activity of Mr. Stroh,—come the publications of the *OPERA POETICA* (University of Upsala, 1910, 88 pp.); *FESTIVUS APPLAUSUS*, in zincotype reproduction, (1908, 28 pp.); *ITERINARIA* (Royal Acad. of Sciences); *Selectæ Sententiæ* (New Church Publishing Society of Stockholm); *CAMENA BOREA* (London Swedenborg Society); the *DIALOGUE BETWEEN MECHANICA AND CHYMIA*, *NEW ARITHMETIC*, and *REVOLUTION OF THE EARTH*. (New Church Book Room of Stockholm).

Other works published since the inception of the SWEDENBORG SCIENTIFIC ASSOCIATION are *THE INFINITE*, by the London Swedenborg Society; and the little work on the *MOTION OF THE EARTH AND PLANETS*, published at the expense of Mr. L. P. Ford. In the case of both these works reports were made to the SWEDENBORG SCIENTIFIC ASSOCIATION, and if the publications themselves are not due to the activity of the Association, that body was certainly recognized as the medium wherein interest in their publication would be centered.

We would not wish to be understood as claiming for our body fruits which are not its due. A large influence in the publication of the works in Sweden is due to the activities of various bodies of the New Church in sending MR. STROH to that country to superintend the phototyping of Swedenborg's theological MSS. There are also other causes, not the least among which was the enthusiasm of MR. STROH himself, to say nothing of the appeal to scientific men, made by the intrinsic merits of the philosophic writings. And yet, after all due allowance is made, we can say without hesitation, that the publications of the philosophic writings during the past eighteen years is due mainly to the influence, more or less direct, of the SWEDENBORG SCIENTIFIC ASSOCIATION in which body is concentrated the activity of all who desire the spread of a knowledge and comprehension of the master philosophy of EMANUEL SWEDENBORG.

Summarizing the work of the Association during the past eighteen years, we obtain the following list of realizations:

WORKS PUBLISHED BY THE ASSOCIATION.

English translations.

Scientific and Philosophical treatises.

Causes of Things. Fire and Colors. Fossils. Height of Waters. The Rise and Fall of Lake Wenner. Soils and Mud. A Method for Discovering Mines. Letter to A'Melle on the Deluge. Hydrostatic Law. Motion of the Elements. Arguments for the Principia. The Infinite, Indefinite and Finite. Mechanism of the Soul and Body Way to Knowledge of the Soul. Philosophy of Universals. Corpuscular Philosophy	pp. 139
Summary of the Principia	59
The Senses	480

A Flying Machine	15
The Fibre (not yet published), about 400 pp. Latin.	
Catalogus Bibliothecae Em. Swedenborgii	16
De Sale	167
	<hr/> 926

TRANSCRIPTS BY COMMITTEES OF THE ASSOCIATION AND NOW IN ITS
ARCHIVES.

Psychological and Theological Notes (Codex 36). Excerpts from Cicero, Descartes, Malebranche, etc. (Cd. 37). The Magnet (Cd. 81). Sulphur (Cd. 82). Salt (Cd. 83). Silver (Cd. 84). Vitriol (Cd. 85). Various Scientific and Philosophical Excerpts and Notes (Cd. 86). Swedish Blast Furnace (Cd. 99)	pp. 2751
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TRANSCRIPTS MADE FROM THE PHOTOLITHOGRAPHED MSS. AND MOST OF
WHICH HAVE BEEN COMPARED WITH THE ORIGINAL.

Posthumous (or Lesser) Principia. Ode to King Frederic. Observata in Corpore Humano. Fragmentum de Infinito. Summary of the Principia. Argumenta de Principiis. Phy- sical and Optical Experiments. De Causis rerum. Phil- osophia Corpuscularis. Annotations in Swedenborg's Al- manac for 1752 (concerning the publication of Arcana Cœlestia). Mechanism of Soul and Body,—the whole total- ling more than	120
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MS. TRANSLATIONS BY COMMITTEES OF THE ASSOCIATION, AND NOW IN
THE POSSESSION OF THE ACADEMY OF THE NEW CHURCH.

Dædalus Hyporboreus, and Algebra	300
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PUBLICATIONS BY OTHER BODIES DUE TO THE ACTIVITY OF THE SWEDENBORG
SCIENTIFIC ASSOCIATION, OR THE WORK OF WHICH HAS BEEN DONE
BY MEMBERS OF THE ASSOCIATION.

History of Creation (Academy of the New Church)	56
Opera Omnia (Original texts):	
I. Height of Waters. Fossils. Rise and Fall of Lake Wen- ner. Miscellaneous Observations. Scientific Corre- spondence	344
II. Posthumous (or Lesser) Principia. Arguments for the Principia. Summary of the Principia. Principia, Pt. III	363
III. Chemistry. Iron and Fire. On Finding the Longitude. The Construction of Docks. De Causis Rerum. Fire and Colors. Dialogue Between Mechanica and Chymia. Philosophia, Corpuscularis. The Stoppage of the Earth.	

Revolution of the Earth	328
(Published by the Royal Academy of Sciences of Sweden.)	
Tremulation, Ontology, Worship and Love of God (Mass. N. C. U.)	439
Generation (Boericke & Tafel)	391
Opera Poetica (Upsala Univ.)	88
Festivus Applausus	281
Iterinaria and Daedalus Hyperboreus (R. Ac. of Sc.)	271
Selectae Sententiae and Camena Borea (Swed. N. C. Pub. Soc.)..	—
Mechanica and Chymia, New Arithmetic, Revolution of Earth, (phototypes, pub. by N. C. Bokförlaget)	86
A word may be added as to the receipts and expenditures of the Association since its formation to the end of the fiscal year in 1915.	

RECEIPTS.	EXPENDITURES.
Membership dues\$2,762.94	New Philosophy, Publications, etc.\$5,865.66
Subscriptions to New Philosophy 2,028.56	Bal., May, 1915 188.59
Advertisements 66.00	
Sales of publications ... 173.17	
Special contributions:	
Academy of the	
New Church ..\$300.00	
Gen. Convention . 300.00	
Rotch Trustees .. 100.00	
Miscellaneous ... 323.58	
—————\$1,023.58	
	—————
\$6,054.25	\$6,054.25

It should be noted that the balance of \$188.59 is offset by the cost of printing the Index to the SENSES, and the FIBRE. As a matter of fact the Association has now a considerable deficit, and the continuance of its uses requires the loyal support of its members not only in respect to the payment of their own dues, but also, as pointed out by Mr. Doering on another page, in their efforts to extend our membership. The SWEDENBORG SCIENTIFIC ASSOCIATION stands as the only body in the New Church that concretely represents the desire and effort to publish and promulgate the Philosophical teachings of EMANUEL SWEDENBORG. Its appeal is therefore made to every single person, in the New Church especially, and also to those not of the New Church, who desires the furtherance of its uses. On this appeal and the response thereto must rest the continuance of the work of the Association.

A COMMUNICATION FROM THE TREASURER.

To the Members of the Swedenborg Scientific Association:

On another page the readers of this magazine will find a statement of what the Association has accomplished since its organization; and thus will see that in a measure the ideals of the organizers have been fulfilled. These ideals were the propagation and dissemination of the Philosophy and Science of Swedenborg, and to accomplish this, Swedenborg's own works must first be brought out that they may be studied and expounded.

The dues from the members, in a large measure, have made this work so far possible, but the undersigned wishes to call attention to what is yet to be done. That there is more still to be done than has already been done will be seen from the following list of works and manuscripts which have never been translated anywhere with the exception of a few which were translated and published in the DOCUMENTS by Dr. R. L. Tafel, and which are not accessible.

The list follows in Chronological order:

Daedalus Hyperboreus.	Attempt to find the Longitude by means of the moon.
A Siphon.	A new Arithmetic.
Sailing up stream.	Description of Swedish blast-furnaces and their smelting processes.
Memoranda concerning some tests and experiments.	Proposition to improve the Currency.
A plan and calculation for a Screw-Jack.	Information on docks, sluices and salt works.
Stereometric proportions and some new stereometric rules.	Geometry and algebra.
Description of a crane.	Memorial on Copper.
Experiments on the Echo.	Reply to Quenzel reobjection to method of finding longitude.
On the institution of salt boileries in Sweden.	The Magnet and its properties.
Information about the tin-work of Stiernsund, its use, and tinning.	Swedish Currency.
Brief account of Sluices.	On Swedish finances.
A new theory concerning the decreasing circuit of the earth.	On mining Copper and Iron.
Improvements at Carlsrona.	On establishing Rolling Mills.
Utility and necessity of instituting an observatory in Sweden.	On encouraging production of Iron in Sweden.
Commerce and Manufacture.	Extraction of silver from copper.
Algebra.	Vitriol and the method of boiling vitriol.

Sulphur and pyrites.	Reply to Hiorter's Criticism.
Salt.	Mathematics and Physics.
Comparison of Wolf's Ontology and Principia.	Philosophical and Theological notes.
Notes on Wolf's Psychology.	Introduction to Rational Psychology or the doctrine concerning representatives and representations.
Iron and Copper, Vols. II. and III. of the Opera Philosophica.	Various things in Mineralogy, Anatomy, Chemistry, Psychology, Pathology, etc.
Observations in the Anatomists.	Notes on Metaphysics.
Muscles in general.	Swammerdam's Book of Nature.
The skin and the tongue.	Muscles of face and abdomen.
The brain (2 Vols. still to be done).	
Computation of the magnetic declination in Upsala.	

Besides these the following works are out of print: Chemistry, Miscellaneous Observations, Hieroglyphic Key, Animal Kingdom, Posthumous tracts.

The number of pages in the above that have never before been published is approximately 5,000, and the number of pages to be reprinted is 1,775, making a total of 6,775 pages. This looks like a very formidable undertaking, and the dues from our two hundred odd members are not sufficient to do very much toward accomplishing the end we have in view. But these dues will accomplish something and the members who pay these dues can do still more if each one of them will bring the uses of the Association to the attention of their friends and use their influence to get them to join the Association. If each member would sufficiently interest only two friends to join the Association it would treble our membership and thus also the uses of the Association.

Moreover, as noted in our advertising pages, the members of the Association can now, owing to the liberality of the several publishers, get nearly all the published scientific and philosophical works of Swedenborg at half the retail cost.

This should mean a great deal to our members and those interested in Swedenborg's Science and Philosophy and should serve as one of the best means of getting these works before a larger audience. There can be no doubt that when they once get a hearing their value to true science and philosophy will be much more appreciated.

C. E. DOERING, *Treasurer.*

PHYSIOLOGICAL PAPERS.

BY LILLIAN G. BEEKMAN.

IX. THE FOUR-FOLD MAN, OR THE HUMAN TABERNACLE
ANSWERABLE TO THE DIVINE PROCEEDING.

The kingdom of the Divine proceeding is the kingdom of the substances and the atmospheres of the universe. It is the Kingdom of the Lord as to Use,—creative, formative, actuant. Its First is hid in the living production of the minima of the Divine Essence in and from the substance of the Infinite Esse, as the very seed and Only-Begotten from eternity of the All-Father,—the body of God-man; the primordial points of finitization; the primitives of the spiritual sun. This is that prime of the Proceeding Divine, produced into the universe, which is formed successively into a series of atmospheres,—from the first which is universal to the last which is the atmosphere of a natural world, existing only as a little column enveloping an earth. This is the Proceeding Divine which is the garment reaching down to the foot (Rev. i. 13).

From this, the Proceeding Divine, was and is the universe of heaven and the world, as to their substances, their ordinations, their vivifications, their illustrations. It is by this that the Lord has infinite power throughout His universe of heaven and His universe of earth. Moreover, it is by this that He is able to actuate His creatures of all degrees, and to act immediately upon every degree of His creature man. This is the tabernacle of the presence and power and manifestation of Jehovah God in His created universe.

The full series of the Proceeding Divine comprises four successive degrees of active atmospheres or etherial media. Hence the tabernacle seen upon the mount of revelation possessed four apartments.

Now the series of the active atmospheres, the Divine Proceeding which is alike present in heaven and on earth, is that mighty tabernacle of successive media appointed, where the

creating Lord may meet His creature man, and man may meet with God; a tabernacle framed and spread before ever a man breathed upon any earth, or first growing plant drew its substance from the foamy sea.

Moreover, when Jehovah God formed man He framed him of four-fold degree, shaping in him as it were four bodies or apartments of faculties of as many degrees, answerable each to each, over against the four degrees of the Divine Proceeding, the tabernacle of the four active atmospheres or media,—answerable in organic faculty, in perfectable power, even as eye is answerable to ether and ear to air.

This is the story of man, as a four-fold organic tabernacle imaging and answerable to the four-fold tabernacle of the Divine Proceeding. In this correlative co-ordination is the ground of our Lord's reference to His body as a temple not to be destroyed, since forever He could raise and rebuild it.

We will make first a study of the Holy of Holies in the tabernacle of the Proceeding Divine, and also that which is answerable and reciprocative thereto in the human form, the organic tabernacle of man. Then a running indication of the other, succeeding apartments or atmospheres of the Divine Proceeding, with the degrees or planes of the organic human tabernacle answerable thereto.

As a general introduction note the following teaching of Divine Revelation:

That the Son from eternity was the Divine Human from eternity, and that this was the Divine Proceeding from which is heaven, thus the Divine forming it, is evident from the Lord's words that they have not seen or heard the Father; that by the Divine Truth all things were made (*Ath. Cr.* 62).

Man is so created that he may be a heaven in least form corresponding to the grand heaven; and [it must be known] that the Lord was heaven itself as to the life of all, and that angels and men (are heaven) as to reception in finite forms (*ib.*, 70).

The ancients presented God as a Man girt as to the head with a radiant circle, as though they were rays around the sun; so likewise the moderns. This arises from the common idea, which all have from heaven, that the Divine is like a Sun, or that there is a Sun around God (*ib.*, 153).

The extension of the sphere from the Divine is into the universe as the extension of a sun (*ib.*, 154).

The Lord as a Man is girt about by the Divine Love which appears around the Lord as Man, like a Sun.

This Love or Sun is His Divine Love proximately proceeding from Him; the radiant circles are devolutions of the Infinite, so that it can be applied to angels in its order. . . .

The Divine proceeding is what is extended in the universe, and it is the Divine Truth and the light of that Sun. Hence this is the inmost of the spiritual world; and this is that from which nature has taken origin; and this is extended in the created universe. It is afterwards formed successively into spheres, the last of which is the atmosphere of the natural world (*ib.*, 189-191).

The heat and light that proceed from the Lord as a Sun are what, by eminence, are called the Spiritual. . . . From this Spiritual it is that that whole world is called spiritual. . . . That Light and Heat are called the Spiritual, because God is called a Spirit, and God as a Spirit is that Proceeding (*D. L. W.* 100).

There are three things in the Lord which are the Lord, the Divine of Love, the Divine of Wisdom, and the Divine of Use; and these three are presented in appearance outside the Sun of the spiritual world,—the Divine of Love by heat, the Divine of Wisdom by light, and the Divine of Use by atmosphere which is a containant (*ib.*, 296).

Because these three, Love, Wisdom, and Use, are in the Lord and are the Lord; and because the Lord is everywhere, for He is omnipresent; and because the Lord cannot make Himself present, as He is in Himself and as He is in His Sun, to any angel and man, therefore He presents Himself by such things as can be received; and He presents Himself as to Love by heat, as to Wisdom by light, and as to Use by atmosphere. That the Lord presents Himself as to Use by atmosphere, is because the atmosphere is the containant of heat and light, as use is the containant of love and wisdom. For the Light and Heat which proceed from the Divine Sun, cannot proceed in nothing, thus not in a vacuum, but in a containant which is a subject; and this containant we call the atmosphere which surrounds the Sun and takes it up in its bosom, and transfers it to heaven where are angels, and hence to the world where are men, and thus makes the Lord's presence everywhere (*ib.*, 299).

After speaking of the atmospheres from the natural sun, the last two of which are around earths, and by which atmospheres the sun exercises all its powers and produces all its effects outside itself, the teaching continues: From these things some idea can be formed respecting the infinite power of the Lord by the Divine Truth. From Him as a Sun emanated in like manner auras and atmospheres, but spiritual, because from the Divine Love which makes that Sun. These spiritual auras and atmospheres which are nearest to the Lord

as a Sun are most pure, but, being removed by degrees, they are gradually less and less pure. Hence it is that there are three heavens. These auras or atmospheres which are spiritual because they existed from the Lord as a Sun, actuated generally present heat, and modified singly, present light. That heat which in its essence is love, and, that light which in its essence is wisdom, are called in particular the Divine Truth; and these, together with the auras, which are also spiritual, are called the Divine Proceeding. From these the heavens were created and also the worlds; for from the spiritual world are produced all things that exist in the natural world, as effects from their efficient causes. From these considerations, now, as in a mirror, can be contemplated the creation of heaven and earth by means of the Divine Truth proceeding from the Lord as a Sun. And also to some little extent it can be comprehended that the Lord has infinite power by the Divine Proceeding. This also is meant by the words: In the beginning was the Word, and the Word was with God and God was the Word. All things were made by Him" (*A. E.* 726, ii).

All power is together in lasts,* and hence the Lord has infinite power from firsts through lasts. Firsts are what are in the Lord and what proximately proceed from Him. Lasts are the things which are most remote from Him, which are in nature and are the ultimates* there. They are called ultimates because the spiritual things which are prior cease into them and subsist and rest upon them as upon their bases; and therefore they are immovable. These therefore are called the ultimates of Divine Order. That in ultimates is all power is because in them priors are together. For there is a connection of all things from the Lord Himself through the things which are of heaven and of the world even to those ultimates. But the Divine Power is power through the Divine Proceeding which is called the Divine Truth (*ib.*, 726, iii).

By the Holy Spirit is meant the Divine Truth, and this was in the Lord and is the Lord Himself. . . . The Holy Spirit there (*i. e.*, in the conception of Mary) is the Divine Truth proceeding from Jehovah the Father, and this Proceeding is the Power of the Most High which then overshadowed Mary. This therefore agrees with the following in John, The Word was with God and God was the Word and the Word was made flesh (*T. C. R.* 140).

The things said of the tabernacle and its tent with the two coverings thereof, are passed by without further explanation, because they are such as, by reason of ignorance, fall with difficulty into the idea of thought. For where is ignorance there is blindness. Few if any know that heaven is represented and thus described by the tabernacle,

*The Latin word *ultima* means both "lasts" and "ultimates."

and its external by the tent with the two coverings thereof. . . . Nay, hardly anyone knows that the man who is in the good of love and faith is a heaven in least form, and that, both as to his interiors and exteriors, he corresponds to heaven. If these things had been known, the learned in the Christian world who have acquired for themselves some knowledge of the forms of the human body, might be in some intellectual light and consequently in some idea respecting heaven, and then might grasp what things in heaven are represented by the ark, its propitiatory (etc.). For similar things occur with man in his internals and externals, and moreover, are represented in material form in his body, to which the internals exactly correspond. For unless externals which are corporeal exactly correspond to internals which are things intellectual and voluntary, there would be no life in the body and thus no corresponding acts. It is said that similar things occur in the tabernacle as in man, because representatives in nature refer themselves to the human form and have signification according to that relation. In the externals with man are four coverings which surround and enclose all the interiors, and which are called cuticles and skins. Similar things are represented in the coverings which constituted the expanse of the tabernacle. Hence the understanding can be enriched with some light concerning the forms of heaven. But still that light would be extinguished with all who do not have a distinct knowledge of the things which are in the human body, and at the same time, a distinct knowledge of the spiritual things which are of faith, and of the celestial things which are of love, to which those things correspond (*A. C.* 9632).

If the auras of the world are four, and if these are so many forces of the nature of the universe, the soul must descend by the same number of degrees, and adapt itself to each, and form an organism corresponding to all. . . .

The first of the organs is the spirituous fluid or soul whose office it is to represent the universe, to have intuition of ends, to be conscious, and principally to determine. . . . This is a faculty distinct from the intellectual mind, prior to it and superior, more universal and more perfect. . . .

The next organ under the soul is the mind, whose office it is to understand, think, will. . . .

The third in order is the animus whose office it is to conceive, imagine and desire.

The fourth or last is constituted of the organs of the five external senses. . . .

Although there are this number of degrees, yet the animal system consists of nothing but soul and body; for the intermediate organisms are only determinations of the soul, of which, as well as of the body, they partake (*E. A. K.* 273-4, 277-280, 283).

That there are four distinct faculties or lives with man, one within the other, see *SPIRITUAL DIARY*, n. 2835; namely, a celestial and spiritual which corresponds to the angelic heaven, a rational which corresponds to the heaven of angelic spirits, and an interior sensual which corresponds to the heaven of spirits (*A. C.* 978, 1 *Ad.* 923).

THE PRIMAL ATMOSPHERE AND THE ORGANIC HOLY OF HOLIES.

The Third which is brought forth and composited from the primitives of the Spiritual Sun is an atmosphere. This is the first atmosphere or aura; the third successive (*A. C.* 7270), as it is received into the celestial heaven and is extended throughout the universe to be afterwards formed successively into the other atmospheres (*Ath. Cr.* 191). For "the Divine Sphere extends into the universe since it proceeds from the inmost and the inmost is the all in all of the things that follow" (*A. C.* 10188). This is the Divine universal atmosphere which "fills both worlds, the spiritual and the natural, and operates the effects of those ends which the Lord predestined at creation, and for which He provides ever since creation" (*C. L.* 386); which "is the conjugal sphere that inflows from the Lord into all and single things of the universe even to its ultimates" being "the most universal sphere" which "infills the universe and pervades it from firsts to lasts" (*C. L.* 222); from and in which sphere is generated the flowing human formative substance or soul,—that internal in and by means of which, the Lord alone weaves the organic man.

The conjugal of good and truth is what inflows from the Lord into man and makes his human life. . . . This conjugal of good and truth is implanted from creation in the soul of every man and also in the things that follow from the soul; for it fills the universe from firsts to lasts, and from man even to worm (*C. L.* 203-4; 183, 188).

This is the first atmosphere,—the atmosphere proximate to the Spiritual Sun and which is of the very essence of that Sun (*D. L. W.* 300). It is that first aura of the *PRINCIPIA* and the *ECONOMY* without which "effects could not flow from their first causes according to the order of nature" (2 *E. A. K.* 272); that first and universal aura from which is generated

immediately and without medium, the human formative substance or soul; which receives the life of God immediately; and which is the ground of human immortality (*ib.* 245, 332, 168, 300, 350); and this, because by it God-Man is as it were inrooted in the finite creature man, and the finite man is inrooted in God.

For this human spirituous fluid derives from that first aura,—the atmosphere of the universe,—its own power of forming, by descent and representative derivation, all the degrees of the human form (2 *E. A. K.* 635-8). Moreover, as is the rank, office, use, of this formative substance in the microcosmic form, so is the rank, office, use or operation, of the first and universal aura in creation (2 *E. A. K.* 228).

This is that first proceeding aura,—third from the very Logos, the primitives of finition,—which is universal, is the sole atmosphere filling the universe, so that it is the universe. “The direction of the first aura is universal, as the direction of the created universe” (2 *E. A. K.* 349, *fin.* 312; *Princ.* I, vi, 39. *fin.*, 51). It is the Divine universal atmosphere by which the Lord is alike immediately present and immanent in the universe of earth and in heaven, and alike acts upon and in the lasts of order as in the firsts; without which, indeed, there would be no substantiate ground in the universe for the Lord’s immediate presence and operation in lasts as in firsts (*A. C.* 7270; *Div. Wis.* III, 1). Therefore, the doctrine of this aura is very important to New Church theology. As belonging to the human conjugal sphere, or being that sphere (*C. L.* 180), it is the very sphere of religion and is “actually a sphere (or atmosphere of the Divine as to use or atmosphere), elevating all to heaven, which continually proceeds from the Lord and fills the whole spiritual world and the whole natural world” (*T. C. R.* 652). It is the “Divine Universal” as to the highest atmosphere, which is “the most elevated above all” (*A. C.* 6483); which is “Providence in universal” creating and sustaining (*ib.* 6482); and effecting all arrangement into order (*ib.* 6338); it is that primal plane of the Divine Proceeding formed into atmospheres, from which the heavens were created and also the worlds (*Ath. Cr.* 191; *A. E.* 726, ii, iii).

A bullular or foam-like structure is characteristic of, generic to, atmosphere (aura, ether) as such; thus it is characteristic of all Divine Proceeding in the universe, as that Proceeding is successively formed into the series of active atmospheres or auras. This series of auras or atmospheres is four.

The third thing produced from the Spiritual Sun is an atmosphere. This is not in the nature of a third substantiate or finite, that is, a new, larger, more compounded vortex-ring corpuscle; it is a combination of the two grades of finites already bought into existence, into a sort of finest bullular or foam-like form, very flexible, very elastic, extended in the Infinite, in volume vast enough to fill the universe and to constitute the universe; and, together with all the bullæ of its universal volume, palpitating, quivering, continually beating indeed, like little foam-hearts.

In the constitution of the bullular or foam-like texture of this aura, the walls or envelopes of its bullæ or alveoli are formed from the second grade of finites or substantials, set side by side, as sympathizing friend with sympathizing friend, in long lines, until the enveloping wall is complete. Within these spherical envelopes, as well as in the interstices between the bullæ, certain uncombined first finites play in their free reflexing activity, and gyre through and in the Infinite Esse in Whom all the universe is extended, all the atmospheres produced, and in Whom all the worlds move.

This elastic bullular or foam-like aura is the first form created which is able to propagate undulatory motion. And, therefore, it is the first form able to transmit light, heat, or animatory motion. And the whole volume of this marvellous aura in its whole, and in each bullæ of its wonderful form, is kept forever in the stream and rhythm of the God-Man Life, and everywhere beats and pulsates with the cardiac motion of the Spiritual Sun.

These two things,—(a) this bullular or foam-like structure, and (b) this ceaseless pulsatile expansion and contraction, in an animatory motion which may be phrased truly both as a cardiac beating and as an analogue of respiratory action,—

are generic features characterizing all atmospheres or auras. All the planes of the Divine Proceeding extended in the universe and formed successively into four auras, are of the bullular or foam-structure type; and all are kept in a rhythmic beating of alternate expansion and contraction forever.

But the foam-structure of the successive auras or atmospheres of the series, are of increasingly large bullæ or bubbles, and of increasingly stiff, reluctant and slow reciprocations and beatings. The bullæ of the second atmosphere or aura are vastly larger, and stiffer, and slower in movement, than those of the first and universal; the bullæ of the third atmosphere or ether, vastly larger than those of the second aura; those of the fourth atmosphere or aerial elementary, vastly larger than the ether. Yet all are kept forever in the stream of such reciprocation of alternate expansion and contraction; else they would lose their pristine and elementary or atmospheric character (*A. K.* 392, notes a and b), and be inefficient for their potencies and use in creation.

But, as befits the different grades of elastic reverberation belonging to the bullæ of larger size and lower degree with their lessened velocities, this animatory or respiratory motion is derived to each atmosphere from a different source. To the one and universal volume of the first aura, the celestial universal atmosphere, it is derived from the Spiritual Sun and the cardiac Divine Life of God-Man immediately. To each of the several volumes of the second aura it is derived from the Spiritual Sun through the enveloping crust,—fiery, dense, reverberant,—of the natural sun or star, which throbs at the centre of its volume; and the origin of whose motions is living (*cf.* *E. A. K.* 170, 300, 302). To the bullæ of the third atmosphere or ether it is derived only mediately from the undulation running through the second aura, wherein lie embodied the larger bullæ of the third. To the bullæ of the fourth atmosphere, it is derived in analogous manner, from such motion as the prior undulations of the ether volume impress upon them.

In the first atmosphere,—the third successive from the prim-

itives of finiting,—all these things are in their supreme; are as it were incomprehensible to the lower sensory and thought; so elevated are they (2 *E. A. K.* 223, 311-2, 330). Yet we are to conceive of this aura, according to the idea given by Swedenborg, as a marvellous, pulsating, finest foam-aura; the first atmosphere and Divine universal of the proceeding Divine extended through the universe; in volume, wide as the creative thought and purpose; brought forth in the Infinite Esse; the highest Divine as to use or atmosphere; which is in the Lord and is the Lord, and which is the life of the universe (*Div. Wis.* III, i); everywhere throbbing, and in all its bullæ beating in rhythm with the Spiritual Sun; where the cardiac and pulmonic motion of the Lord acts, perpetually.

Here we have something marvellous, even to think upon. It lies in its foam-structure throughout the breadth of the universe, palpitant, a-quiver, alive with reception and operation of the life of God,—this primal plane of the Divine Proceeding,—like some wonder of marvellous protoplasm, living plasm, homo-plasm, of the universe. It is from such things as these, such images and verities, that Swedenborg says “the created universe is organic” and that the Lord alone is Life and thus “that the universe is full of the Lord” (*S. D.* 3576-7).

In this atmosphere or aura is the origin of the human organic form. From and in it is generated by determination, what is called variously the human spirituous fluid, the human internal, the human formative substance.

Two facts concerning the structure and habits of the bubbles of this primal foam-atmosphere are of import in regard to the origin of organics by the determination of this aura,—

First. Its bullæ are not perfectly spherical, but are flattened at the poles; nor are their envelopes entirely closed everywhere (*Prin.* III, v, 4).

In each bullæ there are two minute polar openings, like little mouths, left in the envelope where, on each side, the intertwining of the circulo-spiral line of contiguous second substantials or finites which makes the envelope, curves around

the axis of the common rotary endeavor (*ib.* I, vi, 9, 11, 34; III, v, 13).

Thus wherever God will, these flattened bullæ may be determined by the Divine in their active centres, into long lines with flattened poles together, open mouth to open mouth, in close apposition and contiguity (*ib.* I, vi, 34-5); clinging actively, pole to pole, as, in lower image, magnets cling. Thence will arise in the aura a minute curvilinear "pore" or canal,—something almost like a most eminent vessel,—tending to determine into a full circle (2 *E. A. K.* 315, quoted below).

The likeness to something like an unbroken pore, a connected canal, a circling vessel, thus produced in the aura, is increased by the fact that the finites composing the envelopes of the bullæ, so soon as a full circling pore or canal is thus produced, tend to perpetuate the form. For in the general effort at equilibrium and equation, the finites that were the envelopes of the bullæ, tend everywhere at the polar mouths or retracted cones, to glide out of their own envelopes into the envelopes of the bullæ ahead. And where the bullæ are conjoined to one another by their poles in closest apposition and contact, this action is perfectly possible. The lines of finites which in their spiral twinings weave the envelopes of the separate bullæ, may all flow softly over from the envelope of one bulla to the envelope of the bulla ahead, those of the envelope behind, taking their place (*Prin.* I, vi, 40-1).

The substance of the whole line of envelopes, thus gliding and moving without break as one substance together, would thus tend to entunic the little vessel or pore thus determined, with a sort of flowing permanency, and to hold it thus.

Moreover, by such a connection of the bullæ,—open polar mouth to open polar mouth,—the active nuclear centres of the bullæ are brought into one long line of common determinate opening and flow. Thus the actives occupying the nuclear centres of the bullæ,—those first simple substantiates or first finites which are the primal concretions of the simples of the Divine Essence, or the very primitives of the Spiritual Sun,—themselves are able to pass in a certain ordered freedom, from

one bulla to another in the little connected chain of bullæ which make the fine curving emulous vessel or pore; and the whole inner stream of the actives will flow freely through the ordered chain, gliding continually through the circling of the pore of that minutest canal, as blood through a vessel.

Thus we have as it were a circular reflexing or human vortical form, delineated in the eminent analogue of the supreme fibrils, and receptive of, or bodying about, the flowing infinite; and also a stream of the very primitives of the Spiritual Sun,—the actives of the forth-going composition of the Divine Love; a form designed by the life and movement of the spirit and life of the Infinite, both within those bullæ and upon them (*T. C. R.* 33). And in this little circling vessel or canal (its very walls softly flowing and wreathing and gliding) that Divine Love thus bodied and entuniced about, might design its circuits of formative organic outgo and return; determining this canal (itself flowing) to many forms of use, and to the holding together of many forms of use.

This is the more worthy of note in that the ECONOMY says that the human formative, the human spirituous fluid, or soul, determined immediately and without medium in the first aura by the inflowing spirit and life of God, is as a form delineated therein by means of pores and interstices in the aura itself.

Let us ascend from this [*i. e.*, the mind] to the spirituous fluid, and, by analogy, conceive in it as in a supereminent organ, the least and imperceptible lines or pores analogous to fibrillary lines, delineated and inscribed by the first aura of the world in immense abundance and with incredible perfection; and let us conceive that the essential determinations of this fluid, or that its form, which is the form of forms, results from these delicate delineations. Now as these analogous and supereminent fibrils, in regard to their constituent substances and entities are accommodated or adapted to the reception of life, so the wisdom of life appears to flow in (*2 E. A. K.* 315).

See also the SPIRITUAL DIARY, n. 2487, to the effect that man's interiors are such that they cannot be perverted, perversion being possible only of his interiors. "This can be conceived of (the passage continues), in a spiritual idea, from forms, by those who can con-

ceive of the nature of interior and inmost forms. These forms are such that they are applicable to everything whatever that in the world is possible. They can be twisted in accordance with all things. but still, from the single points as from centres, they conspire to the state of integrity." (See also *A. C.* 4727, 1894, 1900; *H. H.* 297).

This correlates also probably, as the picture to the mind, with the argument of THE INFINITE that the human soul consists interiorly of a flowing stream of the first or simple finites in their free reflexing activity, confined or gliding within as it were a tunic of their co-existent substantiates (*Inf.*, II, i, 7; see also 5 and 6, and ii, 4).

Second. The second point is the old one,—the point namely, that both from inner mechanism of form and conatus and from deep grounds of spiritual impulse, the bullæ of the primal aura are everywhere in the extreme aptitude and necessity to run together to conjoin, in wheeling and vortex-motions, and indeed upon the slightest impulse communicated from within or without; so that in all their organic, as well as in every other, formation, they pass to creative will and operation by swift wheelings, circulations, perpetual circumgyres. Hence also comes it that the figure of the celestial as to action is the figure of wheeling motion, wheels, circumvolutions. For the supreme ends and actions of the Divine creative use are embodied in this aura as in their proper own body; and they act by it immediately. And wherever creative ends are, there a circle arises. For "all things which involve an end constitute a circle," and imply an active force (*A. K.* 260, notes s, o; see also 1 *E. A. K.* 635).

From this it follows that the primal aura, the first degree of the Divine Proceeding, is as it were all wheels, and this in its greatest and most common motions and reactions, as in its most intimate obediences, under the action of God-Man, in the determination of firsts and finests of organic form (*Ath. Cr.* 26, 178; *Corpus. Phil.*).

From this it follows also that when the inflowing life and will and creative love of God determines the units of this aura to act as the very formative substance and ordinating

flow of human organic structure, the aura itself runs into spiral flows and little circumgyrations which form spheres and vesicles; for of such are the organs builded; and "spheres within spheres, and spherules within them" (*A. K.* 147).

From this inmost ground it is that cells everywhere arise in the forming organism; that in the cells themselves are impressed foamy vesicles and spirally entwining and acting lines of fibrils. Hence in its living ordinations in the forming fluid, invisible yet exquisite circulations determine fluent gyres; and apparent vesicles arise, all palpitant, beating like little hearts, from the pulsatile animations of the living invisible points and active centres of the very seed (*1 E. A. K.* 312).

Hence it is, that where the primal aura, thus determined in its celestial human vortex, gathers up the emanations and substances of the earth, and from the earth in the atmospheres, and insets the lines and loopings of its flowing living steam with effluvial spheres and ethereal salts, so that the pattern of what it is doing becomes apparent to microscopic sight and firm and coarse enough to stand out to view and to act as an organic structure, that structure will be found all builded of cells; and all the cells saturated and lying in a fine cell-making lymph.

Moreover, the texture of the cell-substance itself,—what men call protoplasm,—is of a fine foam-structure, and in all this texture is stamped the image of the unseen, determining, forming substance. The human protoplasm itself,—wherein the primal aura at its ultimate return, has mated and conjoined to its own sublime flow, the return atmospheres of the earth,—the whole substance in its embryonic freshness, is of the nature of a mass of viscous foams; palpitant, mobile, gliding; a mass of foams, all the bullæ whereof quiver, pulsate, obscurely; a mass which displays foams finer, foams coarser. Impulsions and glidings of the finer foams act its finer issues and reactions; contractive waves of its coarser bubbles act its coarser operations. And, when larger circulating and secreting operations or functions are on hand, there open in it and for its use large pulsatile vacuoles.

It is thus that all of us are partakers of the first degree of the Divine Proceeding of the great primal aura, the first atmosphere under the spiritual sun,—all creatures who are organized as human forms, as men in copy of the God-Man form, and of the circuit of its outgoing and reflexive life. This is the aura,—in volume one and universal, the first and supreme Divine Proceeding extended through the universe as atmosphere,—in and from which is determined immediately the formative of man, the human spirituous fluid, the human internal or soul. For in greatest and least this primal Proceeding, this first aura, is such that it is Man.

An arcanum in heaven and in the world, namely, that creation is in order that every good conjoined to truth may clothe itself with forms, principally with the human form, because Divine Good and Divine Truth proceeds from the Divine Human of the Lord and from every part of His body. The putting on of form, which is everywhere in the atmospheres, is the essential of atmosphere both spiritual and natural (*Ath. Cr.* 26).

The Divine Proceeding is such that in greatest and least it is Man. Hence angels are human forms. It is similar in nature; hence there is the human form. The disposition in the several degrees, namely, that affection shall clothe itself with a body, and this form the Divine Proceeding, is because what proceeds from the Divine proceeds from the single things of His body both interior and exterior (*ib.*, 178; see also *1 E. A. K.* 633).

Thus from and in the volume of this aura, universal and one, is generated the human internal, or the formative substance, the human spirituous fluid of all men on every earth under the sun. By its flowing tides men are delineated and formed and held together in their every human degree and part, in due succession and order. As the gulf-stream in the ocean, so are the flowing tides of the stream of the primal aura delineating man. The curves and circumgyrations and wonderful windings of its stream delineate actual man from head to heel,—all the four planes of the mind of him, and all the interiors of the viscera of the body of him.

In regard to substance the soul is a fluid, nay, a fluid most absolute; produced by the aura of the universe; enclosed in fibres; the

matter by which, from which, and for which the body exists; the supereminent organ (2 *E. A. K.* 311; see *Fib.* 280).

Every point of the spirituous fluid must be conceived of as most perfectly determined, or as having within it determinations which are representative of its own little world, that is, a determining or representing point (1 *E. A. K.* 311).

The body, in so far as it lives, is actually the soul because . . . apart from its borrowed matters it is the ultimate form or organism of the soul, that is to say, it is the soul itself. . . .

Thus there is nothing in the whole animal body but an organic form determined by the soul according to the degrees of the forms and forces of the circumambient universe. . . . The first determination of the spirituous fluid is the organic cortical substance; the next is the brain or cortical substance and fibres; the third or last is the body itself with its sensory and motory organs. Or, what amounts to the same thing, The first determination of the soul is the mind; the second is the animus; the third is the essential body in respect to looks and forms of action (2 *E. A. K.* 283-4; see also 178, 193, 301-10).

Man's inmost faculty is the soul which is the first faculty in man; for it is in him from conception. This is the first and inmost substance from which man is formed in the womb and also later after birth. Thence also man takes whatever of the human he has with him; for if this be not from his very soul or first substance, whence would man derive the fact of his being a man? (After the soul come in order the other three faculties,—the intellectual mind, the animus and the sensations) (1 *Ad.* 643; *S. D.* 2835-6).

This supreme faculty is not only the soul of the body, but also the soul of the intellectual mind, it alone being open to Jehovah God. Hence is man's life, and hence the life of the intellectual mind and of the whole body (*ib.*, 649; *S. D.* 242).

Ordination of all things is effected by "the universal which proceeds from the Lord, because this universal contains in itself all singulars even to the most singular; these together are the universal which reduces into order all things in the heavens. When this universal acts it appears as if goods and truths ordinate themselves and flow into order as it were spontaneously. So is it with the universal heaven . . . and with societies; for as soon as angels or spirits are gathered together they are straightway disposed into order as if of themselves and thus constitute a heavenly society which is an image of heaven; which would never be the case unless the universal which proceeds from the Lord contained in itself the most single of all things; and unless all these most single things were in the most perfect order. . . . (This is then illustrated by the soul, as follows:) Unless the soul in universal and in singular inflowed into

the viscera of the body, nothing ordinate and regular could exist in the body; but when it inflows singularly and thus universally, then all things are ordained as if of themselves" (*A. C.* 6338; *S. D.* 3419, 4016; *C. L.* 260).

The most general Universal from which all things are contained, is the Lord Himself; and what contains is the Divine Truth proceeding from Him. . . . In man the most general universal which contains the singulars is the soul, thus also it is the Divine Truth proceeding from the Lord, for this continually flows in and makes the soul to be such. The Divine Truth proceeding from the Lord is what is called the Word by which all things were created (*A. C.* 6115).

Nothing can exist and subsist from itself but only from another, that is, through another. . . . Everything disconnected from a prior to itself and, by things prior, from the first, perishes in an instant. The Grand Man or influx thence is that prior by which man is connected as to all and single things of him with the First, that is, with the Lord (*A. C.* 3627).

In sum and complex, the determination of the currents of this primal aura, vortexing, spiraling, wheeling its way, delineate in human fullness and form the outgo and return of the human creative, in human active affections of the Divine Love existent as substance in God, and extended in the Infinite God as the Proceeding Divine.

LIFE WHICH IS DIVINE LOVE IS IN FORM; AND THIS FORM IS THE FORM OF USE IN EVERY COMPLEX. Divine Love which is Life itself is not simply love but is the Divine Proceeding; and the Divine Proceeding is the Lord Himself. The Lord is indeed in the Sun which appears to the angels and from which proceeds love as heat, and wisdom as light; but still love with wisdom is also Himself outside the Sun; distance is only an appearance, for the Divine is not in space. . . . Since Love proceeding from the Lord as a Sun is the Lord Himself, and this Love is Life itself, it follows that this Love which is Life is Man, and thus that it contains in infinite form all and single the things which are with man (*Div. Love*, III, IV; cf. *D. P.* 162).

The Lord's omnipresence in the universe can be grasped to some extent from the fact that man's soul is omnipresent in its body, and can so rule all things of mind and body that all shall fitly cohere (*S. D.* 4016).

It is this determination and delineation of the primal aura, simply this, to which is due the first formation, the perpetual

sustenance, the immortality, and the coherence of the full form of man. This is the human internal or soul, the human spirituous fluid, which courses and circumgyres not only within, but also around every vessel and every plane of the mind and of the viscera of the body, holding them together, and subtly bending thought. It is this which is actual in every fibre of flesh and bodily form, and which runs and acts its wisdom in every drop of blood,—this, the flowing form, the higher human internal, which is not a mind, which is not a body, but is supremely fluent, a sublime essence.

In the most minute human fibres there is nothing solid or coherent and thus consistent, for if there were coherence, or consistence by coherence, it would be highly brittle and would most rapidly be destroyed. In things internal there is not the least part or parts of a part even to the interior and inmost spiritual substances, that is consistent; but they are most highly fluid. It is only corporeal things that can be said to be coherent. But the case is not such as the fallacy of sight and touch induces on a man. For the less coherent a thing is, or the less it emulates the solid, the more durable it is. This is evident from many considerations. In old age when the parts begin to concrete and become somewhat solid, they are thus to appearance more constant; but they are then more brittle and subject to destruction. From this then it follows . . . that the coherence of the bodily parts depends on the circumstance that the single things yield, thus that they are disposed by interiors and inmosts and through these by God Messiah (*S. D.* 242; *Fib.* 254).

This sublime essence then is not our own, although it formed us, builds us, makes us man, holds us individual and one, is wise for us, elevates, sustains, strives. It is the Lord with us and within us, since it lives the life of God and not ours (*A. C.* 1894, 1900; *S. D.* 2829, 2836).

It is by this formative substance that the Lord Himself alone is immediately active in man, and is alike present with and in him, though the man be in the lowest hell or in the highest heaven; though he live at one side of the universe or at the other; be bodied upon our little earth here, or be woven in some mother's womb on an earth belonging to the farthest, faintest shining sun we see. In this plane or degree, the inmost of all who are human, in all the universe are one; for the aura is one and universal, and acts to one universal end.

It is the human internal, the human soul, which is as wise in the unborn infant as in the sage.

The internal of man is that from which man is man and whereby he is distinguished from brute animals. By this internal man lives after death and to eternity; and by it he can be elevated by the Lord to be among the angels. It is the first form from which man becomes and is man. By this internal the Lord is united to man. The heaven that is nearest to the Lord is of these human internals, but still above the inmost angelic heaven; wherefore they are the Lord's alone. Thus the whole human race is most present under the Lord's eyes. These internals of men do not have life in themselves, but they are forms recipient of the Lord's life (*A. C.* 1999, *H. H.* 297).

Form or the recipient state is what induces variations. This may appear from the life of infants, children, youths, adults and the aged. Each person has the same life because the same soul, from infancy to old age; but as his state is varied according to years and accommodations so also is perceived his life. The life of God is in all fullness not only with the good and pious but also with the wicked or impious; in like manner with the angels of heaven and the spirits of hell (*T. C. R.* 366).

The soul of an infant has the same intelligence as the soul of an adult, the soul of an idiot as the soul of a sage; but the ways of communication, from which the mind arises, are not similarly opened, but are still closed in the infant, and distorted and deranged in the idiot. . . . The soul flows into the subjects of its universe in one only manner and without essential union, but according to the modified character and capacity of each subject and according to its form. . . . But the Author of nature has reserved to himself the supremacy over the soul; . . . which supremacy he exercises according to the law that, so far as the soul is dependent upon him, so far it is perfect in every faculty and is conducted to universal and absolute ends (2 *E. A. K.* 294; *Soul* 134).

It is the inmost of the seed. Moreover, the ground of the immortality of the human form, is the priority, the rank, the height, the inwardness, the nearness to the Infinite, of that primal aura in which the human essence is determined. So that, though suns and solar systems were dispersed, it still would remain unharmed (1 *Ad.* 919; 2 *E. A. K.* 350).

This is that human fluid internal which flows as light and life into every plane of our minds, having all the wisdom of creation connate in it; so that in us it is as an ocean whose abundance shall be ours so soon as we shall present cups meet

to be filled with such wine (*T. C. R.* 154; 2 *E. A. K.* 293, 296-8).

Such are the qualities, the predicates, the rank, the office of the human spirituous fluid or soul. Such is the succession from the Infinite, the rank, office, predication of the primal aura in the scheme of God's creation of the universe.

The human internal or soul, the human spirituous fluid, arises as an interior ordering of certain bullæ of the primal and universal aura which the Infinite Esse swings together, polar opening to polar opening, into a sort of connected stream determined into the form of man. So that this special current set up in the primal aura flowingly delineates the full form of man from head to heel, inmost to outmost, primes to ultimates and back again to primes. In its circling outgo and return, this stream outlines the vessels and structures of the four degrees of human faculties or lives, and all the inner and outer forms of vital human use. In complex it delineates the human form,—into which full form the sum of the affections circling forth from the Divine Love of God-Man Creative, always endeavor. This is that soul which represents in its vortexing stream that full form of man "to which nothing can be added and from which nothing can be taken away." For it is the presence and embodiment in man of God-Man the Lord.

This human internal, soul, and formative substance *per se*, is thus verily a fluid, an essence; not a brain, nor a fibre, tissue or membranous structure; not a mind; it is not even to be called the spirit,—unless indeed, by spirit is meant "the Spirit of the Lord" in its intercourse with and in man. It is the human soul *per se*. We call it a fluid, a blood, an essence. It is above imagination. It partakes of life. It is far above the "sphere of anatomy" (*Fibre* 252). It is that inmost or first, by whose presence man is a supereminent organ recipient of God; and by which man receives God-Man, not by influx but by immediate reception. For it is altogether of this soul,—which is the motive and determinant principle, the life and essence, of all our human form,—that, in the body and out of the body, we still live and move and are in God (*Soul*, 159). To ex-

press its power, its quality above all imagination, Swedenborg says, words fail us, for words are taken from a lower sphere; still we must use some words if we are to speak at all (*Soul* 125, 128; *Generation* 168-9; *Fibre* 290). And the use of the terms Essence, Fluid, Blood, marks a distinction that is necessary. We know the distinction between a fluid and a vessel containing it,—even if the vessel should be made of a sort of jellified solidification of such substance as the fluid itself is. We have also a clear imagination of the difference between a blood and a tissue or membrane. And this distinction of images is here necessary, as will soon be clear. Moreover, the human formative or internal does not form and delineate a form only,—the series, namely, of four forms which constitutes the human creature; it also produces a derivative series of vital essences or bloods. It lives and acts inmosty in every globule of human blood, as if that globule were in itself a least microcosm (*Red Blood*,—in *Post. Tracts*,—Introductory statement, and Ch. 1).

Literally, it saturates every fluid and humor of the body; and within the microcosm it is literally everywhere in fluid and “real presence, or species of omnipresence” (*Soul* 174). Thus it alone deserves to be called “the universal” of the human form (*A. C.* 6115). The fibres and tissues, not only carry its fluent circulation stream within themselves, but they exist and act and are as it were everywhere immersed in and surrounded by lakes and streams of it in various degrees of composition, as it is more or less impregnated with salts, effluvial emanations, and atmospheric chyles. For in the body or microcosm it acts everywhere, in and upon every organic part, particle, and member, and this in two ways. Hence the way of its presence and action in its microcosm or little creation is given as illustration of the Lord’s omnipresence and providence in the universal creation, the “Grand Man” (*S. D.* 4016). For what it is, in and to its microcosm, that the first aura of the PRINCIPIA and of the ARCANÆ n. 7270, is in the universal creation (2 *E. A. K.* 228).

But this flowing human internal, this human spirituous fluid or soul, of which all men are partakers, is not the whole or-

ganic stake which a human form, a living human creature possesses in the first aura of the Divine Proceeding. And here is something wonderful, and of supreme import to human history and hope. For in it is that super-human, the beyond-man of the evolutionist's desire, already given in the formed human seed of every beggar born.

The human internal, compressed, condensed, from a portion of the substance of its own streaming, flowing substance, forms as it were the analogue and eminent of a tunic or vessel reflexed about itself,—over a part of its vortexing flow,—to elastically clothe and garment its flowing stream. It thus gives, as it were immediately, a portion of its own self-substance in sacramental gift, to be used to frame a reflexing containing vessel; something as it were continuous like a membrane (2 *E. A. K.* 296-7),—a tunic, sensitive, vital, wonderful (*Fibre* 250), as is befitting to that which, as to substance, is a compressed and compacted form of that supreme fluid which “is perfectly alive in all its singulars or individual parts” (2 *E. A. K.* 352). Yet mere compression and reduction to something as it were membranous and “continuous” (*Fib.* 250) gives it a new nature and quality; for every change of form, even of the same substance, gives a new nature and quality. Here the change of greater condensation introduces into the eminent tunic or fibril thus produced a certain passiveness, persistence, inertia, and objectivity, as compared with the pure living fluid that courses through it; and of course this tunic presents an instant and whole dependence upon the action of that fluid within it, and upon the primal aura around it, not only for its first formation, but also for its after coherence, its sustainment, its fine vibrating tremulation, the rhythmic animatory expansions and contractions of its almost obliterated bullular forms; its living heat, its light, its inmost sense of conscious life, and its perceptive stimuli.

This is the generation and quality of that eminent fibril or tunic,—wonderful beyond measure or imagination,—which transmits the human formative substance, the human spirituous fluid or soul. Such is its substance, and such the source thereof. This is the fibril,—supreme, inmost, most remote,

universal,—from which all other fibres and forms and substances of the human organism, sensitive or motory, draw their existence, subsistence, nature and faculty; so that all the rest of the organism of the body is as it were produced by the will and power which flows into and forth from this fibril (*Fib.* 249-256).

Now the first determination or use which the human internal or soul makes of this fibril is to weave therewith the sensitive and motor organism of a plane of supereminent faculty of celestial mind and life; to be its own immediate consort, co-existent with it on the plane of the first aura, with the powers, actions, life thereof, and the Ends of the Divine Love and use bodied therein. Thus, first of all, the human internal or essence, weaves a sort of celestial cortex, a simple full celestial brain, to act as its own proximate correspondent, its immediate own form and body.

There is in each cortical gland a certain substance analogous to the cortex of the cerebrum and from which arise simple fibres just as medullary fibres arise from the cortical glands. . . .

This simple cortex is the most highly eminent organ of the pure intellectory; for it excels in perception the cortical gland,—the sensorium of imagination and perception,—as much as the latter excels the cerebrum. Its form is the supreme form of nature, that is, the celestial form, acknowledging no superior form than the spiritual. . . . This I shall call the Intellectory.

On this intellectory depends the sensorium, or, on the pure intellect sensation; for there is no sensation unless, from an inferior or superior potency, there be an understanding of the nature of the thing perceived . . . (in order that there may be recognition of what is harmonious, true and good); there must be an intellectory which shall judge and dictate that a given idea is or is not suitable. . . . Without the pure intelligence there would be no thought, still less imagination and sensation. . . .

This intellectory recognizes no other form above itself except the spiritual form,—that is, the form of the soul itself; consequently the pure intellect recognizes no superior to itself except pure intelligence which is of the soul, because this is the spirit. Therefore we ought not to confound the pure intellectory with intelligence, or the intellectory with the soul. For the intellectory, whose form is celestial and is the first form of nature, can understand nothing from itself but only from spiritual essence or form which alone understands, and makes the next following form understand. . . . We believe that thought

is the supreme and proper power of the soul itself; but above that thought which never exists except as impure and mixed, there is a purer thought; and above this is spiritual intelligence itself; while above this is wisdom which is Divine. . . .

Therefore this intellectory is born from the soul itself, that is, its form is from the soul's essential determinations (*Soul* 124-8).

What then is the communication of the soul with the pure intellectory? This intellectory which is likened to a certain simple cortex from which flash simple fibres like so many intellectual rays cannot be the soul itself; for the intellectory ought to be created and formed by substances wherein is a superior form and essence and a spiritual intelligence (*ib.* 166).

The pure intellect whose office it is to know universal nature and from itself to have intuition and knowledge of all her arcana, cannot be instructed by the internal senses, still less by the external, since the pure intellect itself formed all the senses both internal and external according to every type of its own nature. . . . Consequently such an intellect can never be acquired, cultivated, perfected, but it remains the same from the first stem of life to the last, consequently as perfect in the embryo and infant as in the adult and aged; in Davus as in Oedipus; in the insane and stupid as in the prince of philosophers. The intellect which is instructed and perfected is next below this pure intellect and is called human reason and also the rational mind; its operation is thought which is never pure but mixed (*ib.*, 134; see also 155; *W. L. G.* 92, *D. L. W.* 432).

These two, the inmost essence and the simple cortex or pure intellectory, are consort, indeed; are the two which in Old Testament parable are called Abram and Sarai. Because both are possessed by all men, as the ground of the Lord and the celestial,—and this even in the human seed; and because this pure intellectory or simple cortex is the first form framed by the Lord after the soul; because it is the prime without which no other human organic flow is determined, no cortical glands nor fibers, nor weaving body (*Soul* 134, 126); therefore it may be called the first organic or membranous human plane where finite bounded man first begins to be man, existent, objectized, recipient. This also is given in the father's seed (*Origin and Propagation of the Soul*,—in *Post. Tracts*,—*Ch. ii, iii*). And this, in man as a miniature organic tabernacle, is that Holy of Holies, answerable to the Divine celestial, as the eye is answerable to the ether, or the ear to the air.

(*To be continued.*)

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THE NEW PHILOSOPHY.

XIX

APRIL, 1916

No. 2

Editorial Notes

At a special meeting of the Board of Directors, at which Messrs. Chandler and Whittemore were represented by proxy, the REV. LEWIS F. HITE was unanimously elected President of the SWEDENBORG SCIENTIFIC ASSOCIATION and member of the Board of Directors, to fill the unexpired term of the office of the late Dr. Sewall.

We call the attention of our readers to the announcement, on our last cover page, of the Nineteenth Annual Meeting of the SWEDENBORG SCIENTIFIC ASSOCIATION on May 25. This will be the first meeting of the Association since the death of our late President, Dr. Sewall, and one of the duties of the meeting will be the election of a new president. Nothing definite has yet been decided on as to the program, but it is contemplated to have an afternoon and evening session. One of the sessions will include a lecture by Professor Acton on The Books read and studied by Swedenborg.

Members and friends of the Association, and especially those in Philadelphia and vicinity, will, we hope, make a special point of attending this meeting, both to contribute their share in the election of the President and other officers, and, not less important, to welcome the new President when elected, and give him their support at the commencement of his office.

The present number of the NEW PHILOSOPHY contains the first installment of a new translation of certain short philosophical and physiological treatises by Swedenborg, which have been commonly known as OPUSCULA PHILOSOPHICA or—in

the English translation—PHILOSOPHICAL TRACTS. The first two of these treatises—printed in this issue,—are bound in Codex 65, which is a large MS. on the Brain; but from their pagination and the size of the paper, they are evidently leaves from a MS. volume now lost. Both treatises were written about 1739. The remaining four treatises are found in order, one after the other, in Codex 74, and according to Hyde's BIBLIOGRAPHY were written in 1741.

These "Posthumous Tracts" were translated by Dr. Wilkinson and published by the SWEDENBORG ASSOCIATION in 1846, just seventy years ago. The work is now unobtainable, and it is pleasing to reflect that it will be again made accessible to the public by the successor, in aims and purposes, to the original publisher.

This second edition, however, is a new translation. Dr. Wilkinson's version in many places is somewhat in the nature of a paraphrase rather than a literal translation, though, with his sound scholarship, he has rarely failed to correctly interpret his author; and we count ourselves as fortunate indeed that we have his work for guidance and help. But our design is to produce a more literal translation; and if we can combine with this some resemblance to that smooth and flowing diction of which Dr. Wilkinson was so inimitable a master our full purpose will have been achieved.

BOOKS RECEIVED.

THE WORSHIP AND LOVE OF GOD. Pts. I, II, and III. Massachusetts New Church Union. We hope to print a detailed review of this revision of Mr. Clowes' translation in our July issue.

WHAT AND WHERE IS THE NEW CHURCH, by J. Howard Spalding. London. New Church Press. Pp., 350. Price, Sixpence. The design of this little work is to show that the Church Specific, that is, the Church where the Word is and where the Lord is known, is now, in fact, the Christian Church; and that the New Church is a new internal to this Church Specific, whereby the latter is to become renewed, by

the infusion of new life. The writer uses a pleasing style and makes abundant quotations from the Writings of the New Church.

THE SCIENCE OF EXPOSITION, by William F. Pendleton, Bryn Athyn, Pa. Academy of the New Church. Pp. 456. Price, \$2.00. In this work Bishop Pendleton enters upon a field of study which has had little if any attention in the literature of the New Church. The exegetical literature of the past has been concerned in presenting the spiritual sense of certain parts of the Word; but in the present work the author lays down "from the Writings of the New Church" the "rules of exposition" whereby the properly prepared student may himself unfold the Sacred Scripture. His work is the pioneer work in this new "Science." The book is intended for the instruction of ministers, of those engaged in religious instruction, and of parents concerned in the religious training of the children; but it will be highly appreciated by all who delight in seeing the beauty and holiness of the Word.

FIVE POEMS BY EMANUEL SWEDENBORG.

We publish below the fruits of the last work of translation undertaken by our late President, being a rendering into metrical English of some of the poems included by Swedenborg in the *LUDUS HELONICONIUS SIVE CARMINA MISCELLANEA* (Heliconian Sports or Miscellaneous Poems which Eman. Swedenborg sang on various occasions) which he published in 1714 when he was in his twenty-sixth year. The author republished the work, with some additions, in 1716. Other editions were printed in 1826 and 1841.

The translation of some of these poems was essayed by DR. SEWALL at the suggestion of the Editor of the *NEW PHILOSOPHY* and as preliminary to a possible undertaking to translate the whole of the *LUDUS HELICONIUS*. DR. SEWALL, whose literary ability and judgment eminently qualified him for the task, readily accepted the suggestion, and in March, 1914, he submitted the five specimens which we print below, the last two of which have never before appeared in English translation.

In the letter enclosing these specimens the Doctor writes :

"I have been spending the day snow-bound in translating these little poems of Swedenborg,—of questionable value, perhaps for publishing, but of undoubted significance in Swedenborg's biography. There is a subtle metaphysical as well as poetical charm in them. You see I have taken great liberties in the metrical rendering, but I have tried to preserve the substance of the meaning and purport of Swedenborg's lines. I leave to you entirely the decision as to the availability of publishing them in the *NEW PHILOSOPHY*. . . . It would appear that Swedenborg was an amorous young poet and he did his best to express all he felt and meant. If I have interpreted the 'Delia in the Snow' rightly it is a very noble tribute to the power of chastity in a pure woman."

We owe it to our readers to explain that it had been our intention to publish these poems in 1914, but the exigencies of our space did not then well permit, and the matter subsequently escaped our mind,—and we imagine Dr. Sewall's mind also, for at our not infrequent meetings he never referred to the matter. Otherwise it had been our intention to ask the translator to complete the poems by Swedenborg.

MINOR POEMS OF SWEDENBORG.

BY FRANK SEWALL.

I.

TO A MAIDEN NAMED VICTORIA.

VICTORIA was the name thy birth-day gave thee!
Ennobled by the vows of many Dukes!
But may thou never lift victorious weapons,
Yet Victrix, be,—thy parents' gift—a Bride!
For many a conquest shall thy beauty win;
Yet thou, too, shalt one day thy Conqueror know.

Prose Translation.

Victoria was the name thy birth-day gave thee; thou art ennobled by the vow of many dukes. Mayest thou never take victorious arms; but victorious, a bride, have what thou art by gift of a parent. Victorious is thy form (beauty); hence thou carriest many captives; but I know that, also conquered, thou wilt succumb.

II.

DELIA WALKING THROUGH THE SNOW.

As Delia walked alone through the tawny fields,
Suddenly from above a winged storm came down;
Jupiter downward glided from his high' arch
As a God to amuse his spouse in a silvery cloud.
Where the bosom lay open the daring snow crept in;
As many a bird would, fain in such a nest.
But sad it melts away to tears, and drops,
Finding itself on a breast than itself more pure.
And, flowing demurely over the milk-white limbs,
Stands a string of jewels about her garments' hem!

Prose Translation.

As Delia walked alone through the tawny fields, suddenly from above a winged storm came down; Jupiter downward

glided from his high arch as a God to amuse his Goddess in a silvery cloud. Where the bosom lay open the daring snow crept in, as many a bird would gladly hide itself in a nest. But sadly, it melts soon away into tears and drops, finding itself overcome by a breast more white than itself; and, flowing demurely down over the milk-white limbs, stands like a string of pearls about her garments' hem.

III.

TO THE BRONZE ENGRAVING OF MY FATHER'S PORTRAIT

which was not melted and destroyed in the burning of his home.

Wonders to thee I relate, when, in the flames thy dwelling

And all it contained was consumed, thy likeness remained
unimpaired.

Father! thou art like a Phoenix! Thy form is reborn through
the burning:

Alive through the flames, thou returnest to meet what the
fates shall decree.

Prose Translation.

To thee I will relate this. To thee let me tell it. This wonderful image was preserved under the flame when in flames perished thy household treasures. Thou, Father, art like a Phoenix; thy form is born again in the fire, and through the flames returns alive to its destiny.

IV.

TO A POETESS—WHY HER SONGS GIVE PLEASURE.

Tell me wherefore the string which is touched by a beautiful
maiden

Gives back a sound so much fuller in meaning and thrills of
delight?

Why she instills in her verses a certain Nymphean nectar?

Why does the voice sound sweeter that comes from a beautiful
mouth?

True, all that she loves to say comes through the mouth of her saying it;

Each little word she utters is touched by her beautiful lips:
But love is the partner in singing; for not alone words, nor the lips,

But the voice of her singing so sweetly is what one loves so to hear.

Prose Translation.

Tell me why the string which is touched by a beautiful maiden resounds richer in nature and delights! Why she instills her songs with a certain Nymphean nectar? Why the voice sounds sweetly from this more beautiful mouth? Whatever she loves to say flows from the mouth of the saying; and she touches with her lips every little word. When love is the twin in singing not songs alone, nor the lips, but the voice of one sweetly singing is what they love.

V.

TO THE SAME THAT SHE MAY ANSWER ME.

No! 'tis not the fingers, the tongue, nor the lips of the eloquent player,

Fain as would I gladly on these my kisses bestow:

But whatever thou movest when thou dost utter thy songs;

For 'tis thy whole moving body, as moved by thee, that I love.

Happy, indeed, should our love by chance be the cause of producing

A new little muse, or at least one who could write me a letter.

Prose Translation.

Not alone do I love the fingers, the tongue, the lips, of the eloquent one, on which so oft would I bestow my kisses; but whatever thou movest when thou dost utter thy songs. For it is thy whole moving body I love. Happy shall I be if perchance our love shall bring forth a little muse or a short letter.

THE WAY TO A KNOWLEDGE OF THE SOUL.

BY EMANUEL SWEDENBORG.

1. It is a space of many years since I first conceived in mind the cultivation of *Rational Psychology*, or the investigation of the essence and faculties of the soul and of our internal senses. But up to now the great difficulty of these subjects, and the vast number of things to be learned, has prevented me from daring to make a premature advance; for many things were first to be more clearly expounded and to be reduced to an order better arranged. If one who is but slightly imbued with the elements of the sciences, or who is highly instructed in only one or two, ventures to put foot in this direction,—such a one,—because ignorant of many things and sometimes of the principal means, employs vain subtlety for the most part on empty nothings, and discusses ingenious trifles; and, according to his gift of ingenuity, enlightened, or as frequently happens obscured, by a few sciences, he involves a serious matter in trifling disputes; which, moving the brains of men, give rise to wranglings, for the discriminating settlement whereof a judge is called in vain, since skill and subtlety are ever inconsistent in empty arguments. Here is no place for engaging in frivolous contests; the matter is a serious one and needs decisions. For the perfecting of this single science, all the sciences must be called into aid that the world has ever worked out and cultivated. If one enters into this contest with less than all, then at the very threshold how unarmed will he find himself and unequal to the mighty task! For whenever he is ignorant of the things necessary for his guidance, he will draw them out of himself and the acumen of his own mind; that is to say, his own imaginative force, will supply the place of the unknown. And how prone to error is the imagination when left to itself alone and unaccompanied by experience and the precepts of a true philosophy, is well known to anyone with the slightest experience. Merely try some brief excur-

sions and see whether you will not withdraw the standards and sound the retreat, and gather fresh forces that you may return to struggles of this kind with increased powers.

2. If you would earn rewards in this camp you must first devote your whole labor and the penetration of your mind to the investigation and sifting of all such things as closely touch upon the matter in hand and serve it. The portals will be opened to you by an anatomical scrutiny of animal bodies and especially of the cerebrum, the cerebellum, the two medullas and the nerves; without a profoundly acquired knowledge whereof you can never aspire to the inner recesses of this Goddess.* For you cannot divine what Nature is in things unseen except from things seen; and what she is in causes, except some one of the senses. So you do not know what is interiorly carried on in the mind unless you have examined its face, that is, unless you have investigated its brains and medullas. Nor even thus will you arrive at a conclusion as to how the soul unfolds her forces unless you have unravelled the connections of all the viscera of the body; and also the organs of the external senses, which contribute their share to the opening of the organs of the internal senses, by cultivation, all the way to the soul.

3. "The whole of nature exists in her leasts," says Malpighi in his work on the SILKWORM, where also he bears witness to the saying; nor is there forthstanding before the eyes and the organs of the other senses, aught but a series of things which, multiplied by several degrees and finally become slightly gross, represent themselves as the least; in which leasts, therefore, we are wont to set the first term and causes of things,—causes which nevertheless they shut in. Hence from these nothing else can be hoped for, than that they shall offer to the mind ultimate effects wherefrom that mind by its analysis can

**Hujus Themidos*, literally "of this Themis." Themis was the daughter of Heaven and Earth, the wife of Jupiter, and the mother of the Seasons and the Fates who presided over all human lives and destinies. She was

the goddess of justice, order and law. Our author seems to use the name here to personify the temple of life, whose inner recess is the abode and source of all order and law.

go forward to principles; moreover, they are the sole means from which, by connection, the mind can judge. But the way is difficult and laborious. For if we confine ourselves to only a few data and phenomena, we form an idea of causes conformable as it were to them [alone]; and yet they confirm nothing, unless all things whatsoever that proximately and remotely touch the matter, also furnish their consent; nor, if our idea be the truth, will consent ever be lacking, for there is nothing that will not come forward with its vote. There is a connection between all things in the world, since they spring from a single most universal source. Hence of nothing can it be predicated that the truth of that thing has been explored, unless all things concur with their assent. Thus whatever comes now to be treated of concerning the brain,* that same must be confirmed by everything that depends on the brain; that is, by the whole body with all its viscera, organs and parts, solid and fluid; by the records of the diseases of the body, and of those of the animus; moreover, by all that is known to experimental chemistry and physics, and to the other arts; for animal nature in her kingdom proceeds to her effects in the most perfect way through all the arts. Such is the connection of all the sciences required for exploring the powers of the animal machine alone, that if any one of them is wanting the chain is at once deprived of its girder or link, or is so thin that no weight can be suspended from it.

4. Nor is it enough to have drawn upon all the sciences, nay, and also upon rational philosophy and its parts, unless we know how to reduce all things to general and most general conceptions, that is, unless we know how, from all the sciences, to form, as it were, one science that shall embrace them all in its circuit; a science which, although unknown to the world, is yet possible, and whose foundations, moreover, I am eager to lay down if it be my lot to enjoy leisure and a tranquil state of mind. This science I would call the Mathematic Philosophy

*From this it would appear that this little treatise on the Way to a Knowledge of the Soul, was in-

tended as a prefatory statement to a work on the brain.

of Universals.* Without its help we can never hope to arrive at a knowledge of the soul; for it is a philosophy itself,—belonging not to the mind but to the soul (since the mind must be cultivated all the way to the soul, which latter cannot be cultivated); or, it is the analysis whereby she comprehends her affairs. But because, as I have said, this science is as yet utterly unknown, and will therefore sound, perhaps, as a matter of vain attempt, therefore, in the absence of principles first laid down, I am unwilling to proclaim in advance its use; this only I will say, that without its aid we might sooner approach the moon than explore the soul.

FAITH AND GOOD WORKS.

1. That it is faith that saves, and not works regarded as without being faith, is not a matter of doubt. But the question arises whether, granting the possibility of exercising works, *faith without works will save* according to the dogma of the Lutherans. This is seen to be in agreement neither with the divine or revealed word nor with reason; for from these it can rather be concluded that there is no faith without works, and if there were, that it condemns, not saves.

2. *From Sacred Scripture.* The Saviour Himself inculcated nothing more ardently than that we should exercise love towards the neighbor; for He says, He who loveth not his neighbor,—how can he love God? that is, He who does not exercise good works,—how can he have faith? In the sermon on the mount He finally reduced the whole sermon into the form of a conclusion, concluding, namely, that every tree that beareth not good fruits is to be uprooted, plucked up by the roots, and cast into the fire; for it is known from its fruits. When He pronounces the sentence of the last judgment, He says that the wicked are to be sent into hell because they had not taken in the poor and clothed and fed them; but the others who had done this He admits into heaven. His doctrine every-

*Confer the author's "Characteristic and Mathematical Philosophy of Universals," translated

in SCIENTIFIC AND PHILOSOPHICAL TREATISES, Pt. II, pp. 51-56.

where abounds in similar teachings; as when He speaks of the ten virgins and their oil, of the seeds cast into the fields, of the talents, etc., etc., etc.

3. So also the Apostles. John in his Epistle urges scarcely anything else but love towards God and the neighbor; in which love, as Christ himself teaches, is founded the whole of the Divine law both of the old and of the new Testament. James openly detests faith without good works and calls it diabolical. So likewise the other Apostles. Paul, in his Epistle to the Romans, says that it is faith that saves, and not action, that is to say, action regarded as being without faith; to which words of the apostle Herr Luther in his version added, *faith without works*,*—which latter words nevertheless are not the words of the divine text; and I believe that never in his life did Luther commit a greater sin than when, from himself, he added these words; but God be the judge. For an examination and weighing of all the passages will make it apparent that faith without works condemns rather than saves. Let us see therefore what is meant by *action*, what by *will*, what by the *principle of will*, what by *faith* and what by *love*.

3. *Action* is nothing else than the execution or effect of the will; or, it is the will itself working. Of itself, action is only a mechanical something, because it is corporeal, and is almost like the effect of a machine; but the essence of action is the will in the effect; so that action may be called perpetual will, scarcely otherwise than as motion is called by the physicists perpetual conatus. Therefore in man action and will coincide; for in order to the existence of action, there must be in it will as an essence. It is indeed possible to have a similar or even the same action with a different will; and also a similar or even the same will with a different action; but this

*Our author here makes a slight error, which, however, does not essentially affect his argument. Paul's words are, "Man is justified by faith without the deeds of the law" (Romans iii, 28), while Luther translates them "Man is justified by faith *alone* without the

deeds of the law." That by "the deeds of the law" Paul meant the ceremonial acts of the Jewish law, and not the works of charity, is clear from the context, and especially from the preceding chapter, v. 6, 13, 14.

is possible, only in the same way as a similar motion is possible from a different conatus, or a similar conatus from which flows a different motion; for resistences and surrounding objects determine a motion that flows from the same conatus. But let us return to action. In every society wherein we live, this fact is evident, namely, that no regard is paid to action as action, but to action as will. Suppose that three men approach the same monarch with equal veneration, all prostrating themselves at his feet, or bowing to the ground in his presence, or, lauding his virtues to the skies; one from the desire of deceiving him, the second that he may obtain some reward, and the third that he may give expression to the veneration of his mind. The action of all three is the same; yet it is not same in respect to their will, this being other or different in each case. Consequently when the King has discovered the will of each, he is displeased with the action of the one and loves that of the other; and he visits the former with the greater displeasure in the degree that his action more nearly resembles the action of those who, inspired by genuine veneration, display the signs of their own reverent mind. Therefore no consideration is then paid to the action, gesture, or motion of the body, but only to the will; so that action may be said to be perpetual will, no otherwise than as motion is perpetual conatus.

5. *Will* also flows from its principles, or from its principle, just as action flows from will. There are different principles belonging to the same will, just as there are different wills to the same action; in which respect the principle is considered as the determinant and efficient, and the action as the determinate and effect, the middle term being the will. Action therefore is nothing else than the naked principle; for the cause of the cause is also the cause of the causate. Thus, action is relatively nothing but a mechanical something, or like the motion of a machine; similarly, will is like the conatus in motion; and it is principle alone that constitutes the essence of action because it constitutes the essence of will. For, according to the common rule, all the essentials that are in the motion are also in the conatus, or, what amounts to the same thing, all that are in the action are also in the will. It is therefore principle

alone that constitutes the essence of action, because it constitutes the essence of will. Therefore, in civil life, all actions are examined and estimated according to their *principles*, which by others are called *intentions*; and also according to the *ends for the sake of which* one wills and does the action. In common speech, moreover, the word *will* is used for principle, being considered as the same thing. This is the peculiar property of man, since he has the ability of willing from antecedent principles, or from an antecedent intuition of an end; nor does this exist in brute animals.

6. *Principle* is all that which determines the will, and renders the will such as it is. There are *physical* principles, that is to say, corporeal and sanguinary, such as divers affections of the animus, pleasures, the allurements of the external senses, the delights of the world, etc. There are *rational* principles, those, namely, that regard an end, and, relatively to that end,—which, together with the means, we have in view,—determine and enter into the will; which latter, when thus determined, is the will proper. There are also principles which rule the will and which can be called *divine*; for there is an end beyond that which is terminated in this life, and for the sake of which end we should will to carry out the divine principle.” But this principle belongs to a superior degree and is more eminent, since it does not depend on us, and since it rules all other principles. Therefore, it is to be considered not as a principle but as a superior will; but, in that it finally enters into our will, and determines it, it may be called a principle received from God.

*The Latin is not altogether clear. It reads: *Sunt etiam principia . . . quae appellari possunt divina, nam ulterior finis est, quam qui terminatur in hac vita, propter quem id facere velle debemus; sed hoc principium*, etc.; or, literally translated, There are also principles . . . which can be called *divine*, for there is an end beyond that which is terminated in this life, for the sake

of which end we ought to do it, etc. The difficulty lies in the word *id* (it) the antecedent of which is in the plural (*divina principia*). In our translation we have assumed an understood antecedent in the singular (*divinum principium*), since this is implied in what follows, namely, *sed hoc principium*, etc. In Dr. Wilkinson's translation the passage in question is omitted.

7. *Faith*, properly speaking, is, That one believes in almighty God, in Christ the Saviour of the world, and in everything that the revealed Word dictates in Sacred Scripture; consequently it is the principle of will,—but a principle that is divine or received from God. If it enters into the will as a principle, and from thence into the action, then the action is considered not as action but as faith.

8. *Love* keeps equal pace with faith, for he who possesses faith as trust in God possesses also love as the inseparable companion of faith; for the grace of God in him is universal, and when He bestows faith He bestows also love, so that in the degree that faith grows so also grows love; and then, that is to say, when it is conjoined with love, faith is said to be saving or true faith. But historical faith is merely a knowledge or noting that a thing is so; in which knowledge the devils also are instructed who know that God exists such as He is described in the sacred writings. But this cannot truly be called faith, but only knowing. Therefore we should separate this signification of faith, as arising solely from an equivalence of terms, from saving faith, that is to say, from faith conjoined with love. In these respects, therefore, love and faith are one; for granted the one the other also is granted. Although each appears to be something distinct yet they are so united that in the degree that God bestows faith, in the same degree He bestows also love, and with love trust, and with trust veneration and acknowledgment of His grace. Thus since love is the principle of will, it is consequently the essence of action.

9. From these premises let us now take up our argument. Tell me then, What is love? when I am able to do what I will. Or what is endeavor; when a subject is able to do what it endeavors after. A thing can be said to be will and endeavor when it is not able to carry out into action and effect; but granting it the means of producing action and effect, [if it does not do so], can it be said to be anything? or is it not an entity of the reason? Let us use a common example for illustration. We say that this cord has an elastic force, or a conatus to restoring itself when bent; and, when it cannot do

this on account of resistant forces; that it is in a perpetual conatus or effort of acting or reacting. But when it has the power and opportunity to act and yet does not act, is there in it any conatus or active force? Surely, such conatus will be denied it, from the very effect, since it does not act when, with the removal of the resisting forces, it can act. And if it can act and does not, it is a sign that it goes against its own conatus, and that there are principles within it which are contrary to the conatus, or which either restrain its elastic force, or destroy it. Consequently, when it does not act, then elastic force or conatus cannot be predicated of it, or, if predicated, that force is destroyed by a contrary principle. Now there is a like reasoning in respect to faith and action. Faith is the principle of will, and will the principle of action. If action does not follow when it can, what then is will? It is either an entity of the reason, or nothing, or else it is actuated from a contrary principle rather than from faith. Therefore a tree is known solely from its fruit, and faith from works, according to the clear words of the Saviour and the apostles; but not from faith without good works, for this is contrary to the Word of God.

10. Still more suitably than from mere physics, as from cords, the matter can be illustrated from other similes, as from love, friendship, and an infinity of other affections, which, as principles, enter into the will. Yet the one illustration is sufficient since, as being a matter of physics, it more nearly moves the senses which are within the sphere of things physical. And therefore, in this same connection, Sacred Scripture also uses similitudes drawn from the tree, oil, seed, fields, and feasts. The comparison comes more close than, at first sight, we may think; for there can be no better comparison of the will than with conatus, nor of action than with motion. Only add to conatus living force, which is of the soul, and you will have will; and if you add the same force to motion as an effect, you will have action; and so in the other cases.

11. From these considerations it now follows that the pronouncement that *faith without works saves* is contrary to reason itself; but it is agreeable to reason that *faith in works*

saves. In a certain way it can also be explained *that faith saves but not works*, that is to say, works regarded in themselves as without faith,—which works are then, in a theological sense, not good. Also that *true faith saves in the absence of the power or possibility of exercising good works*; for then the man's will may be compared to a conatus which is not capable of action because the resistance is as great as the subject's conatus to action; just as in the case of the elastic force of a bent cord which always reacts or strives to react, but whose action is prevented by a resistance equal to its conatus to action; yet, as soon as the resistance is removed, or the impossibility taken away, it at once acts. Still, faith is saving when there is impossibility of action, only, if, as can rarely be the case, the impossibility is absolute; or, if it plainly strives to act by removing things as it were impossible; in which case the one mite that the poor woman put in the plate is more considered than the golden coins of the rich. God also supplies possibilities in order that He may prove faith as regards men; thus He offered to Abraham the killing of his son; besides innumerable other examples with which the divine word abounds.

12. That love towards God involves love towards the neighbor is now beyond doubt. For love towards the neighbor is the same as the exercise of good works, or the showing that I really love the neighbor, that is, do him the offices of love,—without which there is no love; just as the love of self not only involves that one wills well to oneself but also that he does well. Therefore, if in place of love towards the neighbor we put its equivalent or value, namely, the exercise of good works, we may see that saving faith, which cannot be separated from love towards God, certainly involves good actions, or the exercises of love towards the members of society who live with us. Whether it be towards those who are loved of God, or towards those who are not loved, it comes to the same thing; for we are profoundly ignorant as to who are loved of God and who are not loved, since a good soul may be in an evil body, and the reverse; as can be shown by many considerations. Therefore to judge concerning them belongs to God

alone and not to us; wherefore God says, *Judge not that ye be not judged*. Consequently, if only, from the principle of love towards God or from true faith, we perform offices to the neighbor who needs our help, it is sufficient; nor should we be partial in our benefits, by thinking that this man is more loved of God than some other; for in such judgment, if in any, we are deceived. It is ours to judge actions, and this for the sake of the preservation of society; but it belongs to God to judge the principles of action. It is ours to pass sentence as to what punishment, nay, as to what death, the body shall suffer; but the soul is left to the judgment of Almighty God.

13. Therefore, the *conclusion* is, that there is no love towards God if there is no love to the neighbor; or, that there is no faith if there are no works; and, if there has been love or faith, that it has been destroyed by various principles contrary to the love of God and to faith; and this in such way that it is love and faith that condemn. Therefore, *faith without works* is a contradictory speech, or, as they say, a contradiction in predicates; or, it is the supposing of something from nothing, or of the possible from the impossible; or, the distinction is not possible in this life. In the future life it can be said that love towards God is possible without the exercise of love towards any neighbor. This is true, but in that life love and faith are not considered as saving, since the soul is already saved or condemned; and all the means which are the exercises of love towards the neighbor are taken away, since the subject of action, that is, the body, is extinct. Therefore sumptuous Dives wished for a return to life that he might serve poor Lazarus.

PHYSIOLOGICAL PAPERS.

BY LILLIAN BEEKMAN.

IX. THE FOUR-FOLD MAN. (*Continued*).

This is the human faculty, the celestial, which the soul forms first. A simple celestial cortex founded in the first aura, as the eye is founded in the ether, or the ear in the air, and as the universal human is founded in God. As the modes of the air are to the ear, or of the ether to the eye, the modes of the second aura to the thinking and motor substances,—the middle plane and mind wherein are framed the faculty of human will and understanding,—so are the modes of the supreme and first aura, celestial and universal, to this inexpressible sublime first and reality, the simple or celestial cortex, the super- or celestial man. Here again all who live, all human forms that are woven on this side creation's breadth or on the other, have common part and power, possibility and lot.

With every man there is an internal man, a rational man which is mediate, and an external. The internal man is his inmost from which he is a man . . . and it is as it were the gate or entrance of the Lord, that is, of the celestial and spiritual things of the Lord, into man. What is carried on there cannot be grasped by man because it is above all his rational from which he thinks. To this inmost or internal man is subject the rational which appears as the man's own (*A. C.* 1940, 2093, 2181).

With every man there is a celestial and spiritual which corresponds to the angelic heaven; a rational which corresponds to the heaven of angelic spirits; and an interior sensual which corresponds to the heaven of spirits. . . . Celestial and spiritual things form his inmost man; rational things his interior or middle; sensual things, not of the body but from things corporeal, his external. These three are like End, Cause, and Effect. There can never be any effect unless there be a cause, and never a cause unless there be an end. . . . The sensual man is properly the external man, and the spiritual and celestial man the internal man; but the rational man is mediate between them (*A. C.* 978).

Intellectual truth is distinguished from rational truth, and this from scientific truth, as the internal, middle and external. Intellectual

truth which is internal, or is with man's inmost, is not the man's but is the Lord's with man. From this the Lord flows into the rational where truth first appears as the man's; and through the rational into the scientific. Hence it is evident that man can never think as if of himself from intellectual truth, but from rational and scientific truth, because these appear as his own. The Lord alone, when in the world, thought from intellectual truth, because this was His Divine conjoined to Good, or the Divine Spiritual conjoined to the Divine Celestial. In this the Lord was distinct from every other man. . . . Therefore also, from intellectual truth He desired a rational. Hence it is said that Sarai, Abram's wife, by whom is understood the affection of intellectual truth, took Hagar, the Egyptian, and gave her to Abram for a wife. . . . The intellectual may exist without the rational, and also the rational therefrom without the scientific; but no one can be in scientific truth, that is, in the affection and faith thereof, unless he be in rational truth, into which and through which the Lord flows in from the intellectual (*A. C.* 1904; *cf.* 1495; *S. D.* 2479).

Intellectual truth which is with the inmost is wholly barren or like a childless mother, so long as there is as yet no rational into which and through which it may inflow. For without the rational medium it cannot inflow with any truth into the exterior man. This may be plain from the case of infants. These cannot know the least thing of truth until they have been imbued with knowledges; but the better and more perfectly they are imbued with knowledges, the better and more perfectly can intellectual truth, which is with the inmost or with good, be communicated. This intellectual truth represented by Sarai is the spiritual itself which flows in through heaven,—and thus by an internal way, and this with every man,—and continually goes to meet the knowledges which are insinuated by sensuality. . . . It is like a Light which enlightens and gives the faculty of knowing, thinking and understanding (*A. C.* 1901).

The pure intellect or the intellectual "enlightens the sphere of thoughts and gives the faculty of thinking,—for the sensations of the body can never effect this" (*Soul* 136).

Since then this celestial structural faculty, with all its powers, forces, rank, life, exists in all human beings in the universe who have been or are to be gendered of man, brought forth of woman; and since, from adolescence to old age, it is possible that this inner way and order to the celestial mind or plane may be opened (*Soul* 155); it follows that all human beings in creation in whom it is opened and in any part in-

filled are in some fullness in the celestial life and belong to the celestial heaven (*C. L.* 158; *A. C.* 2093, 7270).

Moreover, as the first aura, in which the form and life of this cortex is founded, is one and universal for all the earths of all the solar systems of the whole creation of the universe, hence it is that all men from all earths of the universe who become opened and infilled as to this degree of the human organism or form, and thus live in or go to the celestial heaven, go to one heaven and form one celestial human form in all its fulness (*A. C.* 6701, 7078; *S. D.* 1200). Although, what that form be our Lord alone can know, yet of His fulness it must partake; for this is the heaven nearest to Him in love, joy, human integrity, wisdom, reception.

Of this fulness, all men are, by the Lord the Former from the womb, predestined partakers; and this by reason of the celestial or simple cortex, the pure intellectory, which in its fulness is in the seed from conception. For this is the heavenly Canaan, the hereditary from the Lord, and the Lord wills that growing men shall enter in to possess it. It is the possibility of this entrance, that every providence of the soul, omnipresent throughout body and brain, perpetually regards, perpetually looks to.

This celestial cortex is also the Tree of Lives which the turning sword of the different isomeric twist of the growing fibres of the plane below, acting under the influence of good or of evil loves, eternally opens the way to, or else wards from. Carried in the human seed itself, it is in all men the hope and mark of the evolution of the human individual and of the human race.

It is of this,—the superman in all men,—that Shaw and Nietschi blindly dream; this that is given to all men even with the soul and seed. And as such it is deserving of close affirmation and of elucidation as to its place, its power, its relations, its possibilities.

This simple cortex, this celestial human form, is that which the internal itself, the human spirituous fluid and soul, first respects, first desires, first forms, to be its consort reflexive,

its body. When formed, the soul perceives all changes taking place in its consort, as though they were changes outside of or objective to itself (*Soul* 128, 166). The love, the reciprocal bond, which unites them, is that the soul loves to receive its sensations through the changes and experiences of its body,—which latter is thus to the flowing soul as an existence of which it is the esse. While the cortex, in turn, as a body, loves to exercise all its perception from the soul, to which it refers all that affects it from outer causes, in order that it may receive the oracle of its esse (*Princ.* Ch. 1, *prin. cf.* 1 *E. A. K.* 314).

This simple cortex or simple cortical substance is the truly celestial form,—the form of the Spirit of God being alone higher (*Soul* 125, 127; *Fib.* 251-4, 269, 279).

It is the simplest, purest, eminent organ; the supreme sensitive and comparative of the human as an organization (*Soul* 126).

In the operation of the cerebellum at all times, and in the cerebrum during sleep, when the cerebrum is conditioned as before birth, “every force begins immediately in the pure intellect,”—the simple cortex, or celestial organic. What comes forth from it is called instinct, and it itself is science, harmony, order, truth (*Soul*, 171). A defect alone of instrumental causes, or of intermediates, hinders its full act in the cerebrum during waking hours (*ib.* 132).

It is as wise in the embryo as in the adult and sage (*Soul*, 134, 155). Nor can it be instructed and perfected from below or outside; for it is perfect and full already in all the arcana of the nature of the created universe (*ib.* 134; 2 *E. A. K.* 276). Past and future are alike present to it, and it contemplates all the sequent degrees and forms yet to be, as already existing in itself. It already presents simultaneously in itself all that to which the middle mind of the rational, the will and understanding, will ever attain to successively (*ib.* 131-2).

It is called the “pure intellect (*Soul*, 166, 171) which is mediate between the spiritual intelligence of the soul (and which is the soul), and the thought of our rational mind” (*ib.* 136-7;

see also the teaching from *A. C.* quoted above, p. 223). "Its operations consist of truths connected among themselves, whence arises a universal truth." Thus "all its ideas are so many natural truths" (*Soul*, 133).

It would seem therefore to be that intellectual referred to in *ARCANA CELESTIA*, 1495, where the warning is given "not to proceed from scientifics and rational truths to celestial truths, without intellectual truths as media." See also the citations on p. 223.

"It represents its simple and universal analysis by likenesses such as are seen in dreams; also by parable and similitudes; nay, by fables like those of the ancients" (*Soul* 135, 132). Its speech is angelic speech, nor do time or space belong to it (2 *E. A. K.* 309).

This is the celestial human cortex, the celestial mind or intellectory, generated and born from the soul itself (*Soul* 128), to be as its correspondent and body within whose building fibril it flows. It is from this,—and bodied in a fibril which is the extension of this,—that the human spirituous fluid descends successively to weave the descending planes of organic faculties, sensitive and motor, and to pour out its power as bloods according to all the arcane sciences of the nature of universal creation (*Fib.* 249-252; 1 *E. A. K.* 314; 2 *ib.* 221-2). And according to the descending scale of the auras, so are built the descending human faculties or lives (2 *ib.* 272-3, 201),—the intermediate mind where are will and understanding, and which correlates to the second aura, the animus or common sensory, and the exterior senses of the body (2 *ib.* 278, *seq.*, 339, 341; *Div. Love* xix). And everywhere, on every plane, the formative fluid, as His body, presents the Lord, operates, vivifies, and actuates the organic forms it framed; and is in ultimates there, even as in primes, forming and elevating all things towards the supreme celestial form, the simplest and fullest cortex.

As respects the celestial cortex,—pure and full human intellectory though it be, and consort and body of the soul, and partner in the life of the celestial aura,—yet the soul itself is

above it. For the ideas of the celestial form or cortex are the first natural truths of the universe, but the ideas of the soul transcend these. For the latter are pure spiritual truths, the ideas and representations of the Spirit of God (*Soul* 138; *Fib.* 267, 269; *A. C.* 1904). And in the relation of the flowing soul to this human celestial body, appear arcana which mirror, image, supremest verity in God-Man. For the human internal or soul enters into this celestial cortex in likeness and similitude as the esse into the essence "cohering with it, determining, forming, and at the same time elevating" (*T. C. R.* 36, 46, 18). And when formed, the two, in man, are related as esse and existere, as the soul and its body by and from and together with which it thinks and perceives and discerns; which two, as one,—yet distinctly one,—are man (*D. L. W.* 14). This is the human work,—existent in its prime type and verity in God-Man, as the Father and the Only Begotten, the Infinite and the Logos, and their oneness as the one God-Man; and then, in limited and finite image and likeness, in the relation of the flowing soul to the simple human cortex formed as its own body. For every celestial man may say of his own internal or soul, "All thine are mine, and mine are thine" (*T. C. R.* 112).

And the relation between the soul and its body,—of which the relation of the soul and the celestial cortex (a relation which is given nowhere else save in Swedenborg's philosophical works), is the first of the series,—the relation between soul and body as to production, distinctness, mutual reciprocation, unity as one man, is the express image given of the relation of the Father and the Son in our Lord, one God-Man (*T. C. R.* 166-9; *D. L. W.* 14).

Moreover in the farther phases of the order of substances and forces and their relation to auras and bloods, other arcana are involved. On all the planes, even to the lowest, the Lord, in the universal blood, the human soul, vivifies, actuates, enlightens, elevates. And, as the Father drew all men to the Son,—and, of those whom He had given, the Son lost none,—so it might be said that the human internal, as it lies about

the spherules of the intermediate mind, everywhere forms, reforms, elevates, gives them light; and empowers every self-effort of that plane to turn from the lower sense-life towards the life, and form of life, of that celestial mind "so near and yet so far."

The marvel, the power, the fear, and the joy is, that that intermediate mind,—embryonic at birth (*A. C.* 1893) as a substance and form,—has a power of its own of self-direction, and holding and withholding of its tensive effort. It can resist. It can quiet itself. It can give itself to be acted upon by the one master or by the other (*Soul* 154; 1 *E. A. K.* 610). And as it is a true intermediate, sensations from the outer world mount no higher. There the will turns, as a pivot, and determines to which it will yield, and thus how it will set its growing fibre; whether along the nearby infinite and universal circles upwards, which will bring it into congenial communication with the celestial cortex, and a correspondence like a new life; or whether along the narrowing curves of the outward and closed circle.

Swedenborg says that the ascent or higher evolution of forms (or substances) is by a something cast off, a limitation dropped. And when there exists in an organic series, an intermediate substance or form, itself as a form more imperfect than the higher form but more perfect than the lower, that intermediate, as it grows and acts, tends to approximate to the one or the other, the above or the below. And if it strives for a superior form, it undergoes an essential purification and determinant change, and is elevated by approximation to that superior form. But if it strives towards becoming an inferior form, then it undergoes an essential assimilation to that lower form (*Fib.* 271-2).

This is the astounding thing! All the power, order, possibility,—either the dream of individual human evolution, or the surety of our holy religion,—is involved in this verity. When, from adolescence on, the intermediate mind, the understanding- and will-mind, thus strives in its imperfections towards the celestial mind,—the super-man from which man

lives, and which is more universal in him than anything in which he as yet lives,—then that effort is empowered to actual effort by the human internal, universal in its flowing circle of life.

For when the intermediate yearns up to give itself as a recipient and wife passive to the control of that upper plane, then is liberty indeed, and all attainment (*Soul* 154; 1 *E. A. K.* 610). For, in every part of the organism, the human internal, by very inflowing, is present, active, vivifying, modifying, forming; even in and around the evil and non-correspondent forms of its body or world.

This is not correspondence, communication; it is immediate influx “the actual presence of the soul in the whole and every part of its body” (*Soul* 174, 159). But the communication and consonance of the celestial cortex as a membranous plane with other membranous planes, can take place only by correspondence; and must wait until the lower planes are instructed and perfected to such correspondence (*Soul* 161, 165, 155). This is parabled in Old Testament story by the statement that Sarai, or truth from a celestial origin, was a “childless mother,” so far as the rational man was concerned, until that intermediate plane should be formed by truths and affections entering by way of influx; while Abram was able to co-act, as a formative or father-force, with planes lower still, and while these planes were still inchoate and unformed (*A. C.* 1901-4; 2 *E. A. K.* 293).

If the effort of the inner tensions of the intermediate mind is bent upon the images and visions of the form below,—the form of the sensory and animus,—there is a middle round of blood which fixes and builds that effort; and,—especially if the blood resolving and ascending into the spherules of the brain be also loaded with gravitating spheres of food,—the very meditating mind becomes sensual, corporeal, unclean, so that it never will be an opened highway to the higher. For a man’s blood nourishes itself with correspondent matters, and his love-determined forms can be infilled by no other (2 *E. A. K.* 305; see also Chap. iii, above).

Moreover, since such ascent or descent of the growing ordinated sphere of the curving, striving intermediate or animal mind, takes place from the opening of adolescence, therefore, from that time on, all the forms that are thus engendered take on a corresponding elevation,—or degradation. See Chap. iv.

Herein is the hope of the evolution or growth of the inclinations and faculties of this intermediate mind upwards towards the celestial cortex; and a transmission of this new inclination and faculty in the very seed, so that the children shall be conceived and born with inclinations and faculties in this plane tending connately to openness towards the celestial; rather than as is now the case, when, from very conception, the inclination to curve down to the animus and the senses is strong upon the intermediate plane, the plane of paternal understanding and will, the proprial man.

Grand is the goal; for this is a striving towards an evolution which swings the circuit of life up to its consummate human bound, and makes the man integral, actual inheritor of all that celestial hereditary from the Lord, which is within all men, so near to, although also so far from, his self-possession.

For of a truth, from maturity to old age, it may still happen that the way of evolution to the celestial plane is opened; the intermediate structures reformed correspondently in some particulars; and the true forms of activities thereof,—infilling and fixing spheres,—capable of opening and infilling the celestial cortex-spheres which are like a handful of pure incense, meet for the hand of the Lord our High Priest to take with Him on the passage from the Holy place into the Holy of Holies. Then the pure intellect, the celestial, perceiving in the intermediate mind or man, changes of state to which it is correspondent, emerges as it were from a prison wherein it has been shut up. Then appears what has been present from the beginning of formation but could not before evolve itself. And when it does evolve itself, which takes place in the course of age, it exhibits itself as most present, in every instant, in the single forms and harmonies of words, and in finding out

their meaning from the connection and order of the ideas alone (*Soul* 155; *A. C.* 1901).

This then is what the first or universal aura of the series of the Divine Proceeding means to human forms, and they to it, all creation over, through God's starry universe. This aura, this primal plane of the proceeding Divine, is the ground of their nearness to and perception of God-Man; that by which He is in them and they in Him; and all the history and possibility of human evolution, whether in the individual or for the human race, is as it were locked in the celestial form,—that supreme and simple cortex, the body, prime, and first of the Soul.

This celestial or super-human form and cortex, is that most holy place and degree in man, viewed as a little tabernacle for the Divine; the most holy place where the ark of the covenant of life abides, and of which God alone is the Light.

The soul, the inmost essence which is the Lord with us, builds this plane answerable to the primal aura. It is the first body of the soul; a body brought forth in and reciprocal to the first, highest, inmost, universal and most holy atmosphere of the Divine Proceeding; that first atmosphere extended in the universe which is as the very universe, and which afterwards is framed successively into three other atmospheres or media of Divine operation. The first atmosphere or aura is the universal formative of finite human life and form (*Ath. Cr.* 189-91, 178, 26).

These are the four atmospheres or auras,—series and media of the substances and forces and lives of the universe,—which are spread abroad as the tabernacle of God-Man stretched forth in the heavens. And to each degree of this series the flowing soul frames a plane of human body and faculty and life correspondent and answerable.

THE SECOND ATMOSPHERE OF THE SERIES OF DIVINE PROCEEDING,
AND THE HOLY PLACE OF THE ORGANIC HUMAN
TABERNACLE.

The first aura, the Divine Celestial, is one, and in one volume through the universal creation. But the second aura is not

brought forth as one volume but as many. For there are as many volumes of second aura as there are starry suns in the created universe.

For this reason it is that the celestial heaven, which is founded in the first and universal atmosphere of creation, is one heaven. But the spiritual heaven, which is founded in the second aura, is not one, but consists of as many spiritual heavenly societies or heavens as are the numbers of the starry suns of creation (*T. C. R.* 160), each society thereof being founded in the specific volume and vortex of second ether, generated by and around its own star or sun. Thus, as the first aura is answerable to the highest place of the tabernacle where God is the sufficient light thereof, so this second aura, this spiritual heaven plane, may stand as the Holy place, the second room of the tabernacle of the heavens, where the candles of the stars give light.

The larger bullæ comprising the second ether cannot be kept in their palpitant motion by the fine action of the Spiritual Sun and Divine Life directly. But they can be maintained in the rippling rhythmic pressures and expansions of light, by the living animatory motion of a centre of the Spiritual Sun acting as a large centre or soul in and from the gross radiant accommodating envelope of primitive metallic substantial (third and fourth finites) which form the encrusting body of a star or sun such as we behold it with our natural eyes.

For natural suns as we see them are double suns. The Spiritual Sun is their centre and soul, the very active central space within; and fiery least metallic substantial are their body. And the two act one sun. Just as with the men whom we see with our natural eyes; they are double men having a spiritual soul and a natural body; and the two act one cause. All things that be in the world of effects, even to the last of the earth, are double things having a soul and a body which act one cause.

The second degree of the Divine Proceeding in the universe as atmosphere or aura, the degree in which the spiritual heaven is founded, is formed of bullæ much larger than those characterizing the first or universal aura; bullæ stiffer, and slower

in their elastic reverberations; slower in the throb of their animatory motion; of less velocity, or less aptitude to pass into motion; and when they are set in motion their circling orbits are of a type less universal.

This second atmosphere or aura can neither be formed nor be animated by the Spiritual Sun immediately; the living cardiac motion of that Sun, the very rhythmic reciprocations of the life of God-Man, are too rapid, too subtle, too fine, to set the stiffer, larger bullæ of the second or spiritual aura into sympathetic pulsatile motion. For bullæ of the second aura are dull and slow and hard as compared with those of the first or celestial.

Yet, for them also it is true that only while in the stream and reciprocation of a pulsatile motion can they be maintained in their active bullular vital form.

Moreover, the first and second successives or substantiates of the two radiant belts below the Spiritual Sun do not afford materials of nature and power sufficing for the stiffer envelopes of the larger second aura bullæ. For them are required substantials or finites still more highly compounded; something of larger mass, lowered velocity, and widened circle of motion.

That the Spiritual Sun may form the second degree or atmosphere of the Divine Proceeding—that in which the spiritual angels live—it was necessary for that Supreme and living Sun to accommodate and instrument itself about by a certain envelope or body; the two acting one effect. It is actually such an accommodation and embodiment of the spiritual Sun which appears in the world of the lower organic faculty as a natural sun or star. For the Spiritual, the soul, is always first, and takes to itself later a body that it may do uses.

But the greater the accommodation, the more narrowed, the less universal, the range of outgoing action. Hence in suns and stars, the Spiritual Sun, acting thus into and from its enveloping body, does not extend its influence far,—not indefinitely far, still less universally. From this it follows that many natural suns are required in the universe, each being a centre of use for that locality of the universe. From this there

follows the formation of as many volumes of second atmosphere or aura as there are suns or stars; each individual volume being developed about its parent star, and localized about it for its after maintenance; each volume, moreover, being the ground and habitat of one defined society of the spiritual heaven (*T. C. R.* 160; *S. D.* 5549).

Neither let it be surprising, nor as it were counter to order, that the atmosphere of the spiritual heavens, that is, the second atmosphere of the series of the Divine Proceeding, cannot be formed save by the instrumentality of the Spiritual Sun bodied in a hollow natural sun or fiery envelope; nor that the spiritual angels dwell in the expanse of second aura produced around such a natural sun. For "the expanse around the Sun of the angelic heaven is not an extense, but still it is in the extense of a natural sun, and, with the living subjects there, . . . according to their forms" (*T. C. R.* 35).

Again, each volume of second aura is not kept in its perpetual rhythmic pulsations immediately from the Spiritual Sun,—through the medium of the first aura; but from the Spiritual Sun inflowing and acting, at it were, across the first aura. For the Spiritual Sun animates the second atmosphere of the Divine Proceeding by acting immediately into and from the parent star or natural sun at the centre of its volume. For the dense accommodated envelope of the sun-star, like a thick viscous envelope, partly deadens and masses the swift reciprocations of the Spiritual Sun, or the cardiac throb of the very life of God Man, so that their force is transmuted by the envelope which they actuate, into larger, slower pulsations capable of communicating sympathetic elastic vibrations to the grosser and stiffer bullæ composing the second atmosphere.

Moreover, as no two suns are precisely alike; as star differs from star in glory; so likewise differ the volumes of the second aura or atmosphere of the Divine Proceeding framed around the stars. Great volumes belong to great stars, small volumes to small ones. Each such difference is the basis and centre of special individuation of genius and type in the society of the heavens formed therein.

Moreover, as, in the human form, the millions on millions

of gray or ganglionic cells, though massed in cerebrum, cerebellum, and spinal systems, are yet all of one plane, degree and order (2 *E. A. K.* 307; *Fibre* 58-60); so, although "there are so many portions of mind as there are cortical and cineritious substances" (2 *E. A. K.* 304), and among their estimated millions and millions, no two repeat the same powers, inclinations, offices, or are interchangeable (*ibid*, 146; *Soul* 20), yet each gray ganglia cell or cortical spherule has its own immediate connection with the Divine; the myriad units of diverse genius and power are all reunited to frame a full symphonic form, human, answerable in full human image, recipient of, reciprocal to, the God Man life in its whole creative effort, outgo and expression on that degree,—the second degree of the Divine Human Proceeding.

These gray nervous cells which, in head and body, in their genius, arrangement, and number constitute such a full human form of the given degree, are the plane of the intermediate, the proprial man, or mind; the organic plane of the will, understanding, thought, and rational of man (*Soul* 23, 150, 153; 2 *E. A. K.* 269, 289, 304-5; *C. L.* 260); from which plane as from its very spring, ground and heart, goes forth the spiritual animal form (*Div. Love* xix; 2 *E. A. K.* 341; *S. D.* 2770; *C. L.* 158).

This is the plane or mind or human faculty second under the soul and its pure intellectory or celestial cortex (*Soul* 134, 123; 2 *E. A. K.* 204, 278-9; 1 *Ad.* 88, 643, 919, 649). This plane also is the proprial man (*Soul* 152),—the man himself. In it, that is, in the will, took place that historic as of itself reversion of the ascending circle of life and life's blood to the world and self, which we call the perversion, decline and fall of the race upon the earth (*S. D.* 5464; *A. C.* 242).

And, inasmuch as no sensations mount higher, and the inmost of the fallen proprium is in this plane and its will, this also is given in the father's seed, so far as its first rudiments, determinations, inclined and curved beginnings are concerned. Moreover, while the human soul in the internal and its celestial intellectory are "indefinitely finite" this spiritual or spiritual animal mind is definitely finite, incomplete, undeveloped (2 *E. A. K.* 252).

While the higher degree of the human form is perfect and whole even from conception, this mediate plane of the human, is as it were nought at birth (*A. C.* 978, 2093, 2508, 2487, 1893; *Soul* 152; 2 *E. A. K.* 277, 294, 296, 298). Not that all these myriad units are not there. They are. Long before birth they are discernible, can be roughly estimated as to the millions on millions of them; their order, arrangement, inner nature, are there. But at birth their development in the department of the cerebellum is somewhat partial, and in many respects not much more than infantile; while in the department of the cerebrum they are still as absolutely embryonic as in the early foetal months, save for a few groups and islands connected with the sense-organs and the main motor mechanisms which are able to act and react under stimuli.

The second aura or atmosphere is the plane of the atmospheres, the degree of the Divine Proceeding as atmosphere, with which this intermediate mind of man, this gray or cortical glandular form, correlates; to which, by the very lay and curve of its constituent fibrils, it is framed sympathetic and mimetic; from the ripples of which it receives its sensations or ideas, according to the laws of which, it acts and reacts (2 *E. A. K.* 272, 289).

Not only are the constituent fibrils of these nervous or cortical units so laid that, with their very sensation and idea, waves and undulations, spiral vortical crawlings and turnings run along their substances; but their little invisible hearts, ventricles, hollow animatory centres or vesicles, are built to the size of the bullæ of the second aura, and natively expand and contract in sympathetic rhythm and consonance therewith. That is, they expand and contract pulsatively with the animatory pulsations of the star or sun of that vortex of the second aura. And, as in stars or suns the animatory motion of the Spiritual Sun acting into and from its body, the solar envelope, is very much slower than its animatory motions *per se*; so all the pulsatile or animatory motions of these intermediate cortical spherules is in so different a rhythm and beat from that belonging to the higher organic plane of faculty or mind, that it makes a certain individual basis of sense and

life in this plane which discretizes, disparts it with an individuality of sense and action, from organic planes above or below. Sensations from the world ascend no higher (2 *E. A. K.* 191). In it is thus the true intermediate, the ground of meeting,—as befits the plane where the will dwells in freedom (*A. C.* 978, 1940, 2181; *C. L.* 158; *S. D.* 899; 2 *E. A. K.* 287).

This is the spiritual. The spiritual animal derives from this. This is the atmosphere or aura of the solar vortices; the plane of the human proprial thought, will, understanding, mind. And it is the same as the plane of the soul or formative substance of animals (2 *E. A. K.* 339, 341; *S. D.* 2770; 1 *Ad.* 918; *A. C.* 3646).

As the second aura differs somewhat in every solar system of the created universe; and as the correlate plane of the intermediate human faculty, the intermediate will and understanding mind, is in each man born, trained in and to the second aura of the individual solar system upon whose earth he is brought forth, is educated, grows; it is evident that all the form, genius, growth, individual and racial evolution will be stamped to the individual feature of the second aura of that solar system. And the result may be so markedly different for that human plane in different solar systems, that men of two solar systems could scarcely on this plane come into comprehension (3 *Princ.* ii, 4); although on the plane above, the universal, they would be one in comprehension and influence.

But as this plane of the gray nervous cells or cortical glands *per se* is the very spiritual-animal plane, which is the plane of the spiritual life and heaven, so it is the plane and organic principle, the passive and active motions of which are immaterial ideas and reasonings; but if it submits to be moved and enlightened by the soul or internal rather than by the senses, the latter become, as it were, intellectual and rational ideas and the rational itself. It is therefore the ground where both Ishmael and Isaac may be brought forth (*S. D.* 209, 222; 2 *E. A. K.* 298).

As the man in whom this plane is the highest that is opened and as it were interiorly formed to truths, comes into the

spiritual heaven, it is evident that after death he will be confined everywhere to the volume of second aura around that particular sun under whose rays he is born. For only there are those of like genius with himself. And only in the range and sphere of that particular vortex can they abide as those who are free and at home.

Herein is a marvel! an arcanum of human life and form! of the microcosm in the microcosm! These myriads of gray ganglia, the cortical spherules or glandules in the human brain and body; these myriads, all of one general plane, each of individual genius, power, office, are set together in series, order, situation, connection, to constitute a full human form of the spiritual animal plane of human life. Nor can one among these myriads be lacking and the form full. Nor can anything transpire in one, of which the others know not.

Now even as are these myriads in the little man, the microcosmic man, so in the Grand Man of creation is the number, the order, the connection, the situation of the societies of the spiritual heavens; and the same is the number, the order, the connection of the starry suns of creation and the vortices about them begotten and brought forth in the expanse of the universal and celestial aura. Hence the order and situation of the suns and their solar systems in the universe is as the order and situation of the cortical brains which are in their complex the intermediate faculty of man (*A. C.* 4039-40; *S. D.* 2728-31). Man in little repeats in his form as in his formation the primal creative order of the Proceeding Divine from which he derives his existence (*Ath. Cr.* 177).

Therefore it is that the Lord from creation forseeing the number of such units of the second order or degree, the spiritual, necessary to fill the form human of that degree in its beginning and its involution history, provides from creation for as many suns or stars (*T. C. R.* 160).

These innumerable starry suns with their vortices are linked each to each in a stupendous order and form throughout the universe, and Swedenborg says, "No change can happen in one which is not perceived in all others." Nor is the form ever full and closed. Stars as yet latent may blaze forth. Ever new

forms, new heavens, new earths may arise carrying the human creation to fuller more varied perpetuation in the creative will and power of the All-Father, the Infinite, Substance Itself, God Man, in whom finite creation is extended, realized, with a bounty, force and power, human vision and love and guidance, infinite. And still God Man transcends. So that all these creations are as it were nought in the breadth and bounty of His life. Nor yet do we know the fullness of life prepared for those who love Him; nor His sustaining, restraining hand upon those who love Him not. Only this we know that it is good to be born within His universe; and that although we were angel of the highest heaven, or evil one of the lowest hell, still He is with us, and His hand sustains that formed in the womb. For in His book were our members written, we being as yet unborn, and His universal hold is still upon us though our bodies were new moulded into grass and flowers ten million years ago.

[THE END.]

NOTE.—In our next issue we shall print some tables belonging to this last chapter of Physiological Papers, and wherein are presented in parallel columns the teachings of the various Works by Swedenborg concerning the degrees of the human mind.

THE NEW PHILOSOPHY.

XIX

JULY, 1916

No. 3

TRANSACTIONS OF THE NINETEENTH ANNUAL MEETING OF THE SWEDENBORG SCIENTIFIC ASSOCIATION.

The Nineteenth Annual Meeting of the SWEDENBORG SCIENTIFIC ASSOCIATION was held in the Sunday School Rooms of the First New Jerusalem Society of Philadelphia, in the City of Philadelphia, on Thursday, May 25th, 1916, the Rev. Lewis F. Hite presiding.

1. On motion the **Minutes** of the Eighteenth Annual Meeting were adopted as printed in the NEW PHILOSOPHY for July, 1915, and the reading of them was dispensed with.

2. The Rev. Charles W. Harvey, Pastor of the First New Jerusalem Society, welcomed the Association to the Society's rooms, and spoke appreciatively of the value of the work which the Association is doing, and of its uses to the New Church as a whole.

3. The Chair appointed the Rev. Charles W. Harvey and the Rev. George de Charms a **Committee on the Roll**. The Committee reported an attendance of twenty-seven members and seventeen visitors.

4. The Report on **Membership** and Subscriptions to the NEW PHILOSOPHY was as follows:

MEMBERSHIP:

New Members since May, 1915	8
Resigned	11
Changed from member to subscriber	1
Died	2
Lapsed	3
Net Membership, May, 1916	210

NEW PHILOSOPHY:

Members and Subscribers	202
Subscribers not Members	23
Total Subscribers	225
Exchanges	14
Free copies (mostly to Libraries)	68

5. The Chair appointed Bishop N. D. Pendleton and Mr. L. E. Gyllenhaal a **Committee on Nominations**.

6. The **Board of Directors** reported that it had held four formal meetings since the last annual meeting of the Association, the dates of these meetings being May 13th, 1915, January 13th, 1916, April 13th, 1916, and May 25th, 1916. In addition the four Directors resident in Bryn Athyn, Pa., had held frequent informal meetings.

On May 13th, 1915, as announced in connection with the transactions of the last annual meeting of the Association the Board elected the following officers: *Vice-President*, Dr. F. A. Boericke; *Secretary*, Reginald W. Brown; *Treasurer*, Rev. C. E. Doering; *Editor of the New Philosophy*, Rev. Alfred Acton.

Following the death of our late President Dr. Frank Sewall on December 7th, 1915, the Board arranged to meet in Bryn Athyn, Pa., on January 13th, when it was resolved to publish the Memorial to Dr. Sewall which appeared in the January issue of the NEW PHILOSOPHY. A copy of this memorial was also sent to Mrs. Sewall.

At the meeting on January 13th preliminary steps were taken toward filling the office of President left vacant by Dr. Sewall's death, and on April 13th Professor Lewis F. Hite was formally appointed President of the Association to fill the unexpired term.

The activity of the Board during the year has centered upon the endeavor to increase co-operation and support in the work of the Association in publishing Swedenborg's philosophical and scientific treatises, and to take such steps as may aid in the spread and study of these works.

With the end of making the works already published more easily accessible, and at the same time of increasing the mem-

bership of the Association and thereby the funds available for the publication of additional works of Swedenborg which have either never been published or are out of print, the Board of Directors decided to communicate with all the publishers of Swedenborg's philosophical and scientific treatises asking them if they would be willing to co-operate to the extent of offering such treatises as are in print at half price to the members of the Swedenborg Scientific Association if sold through the Association. The response to letters sent to the various publishers has been very gratifying and the result, as already published in the pages of the *NEW PHILOSOPHY*, is that practically all the works now in print are available at half the retail price to members of the Association.

In January the Treasurer estimated that approximately \$500.00 was needed to complete the publication of the *SENSES* and the *FIBRE*. It seemed most desirable that the publication of these works should not be delayed. The funds of the Association being at a low ebb the Board therefore resolved to ask the *NEW CHURCH PRESS* (of London), the *ROTCH TRUSTEES*, the *NEW CHURCH PRESS* (of New York), and the *ACADEMY OF THE NEW CHURCH*, if they would be willing to assist in the publication of these works by each subscribing for 50 copies of the *SENSES*, and for 50 copies of the *FIBRE* at half the retail price. As a result the *NEW CHURCH PRESS*, Limited (of London), expressed the willingness to subscribe for 25 copies of each of the two works, the conditions produced by the war preventing them from advancing a larger sum than would provide for this number. The *ROTCH TRUSTEES* agreed to subscribe to the total amount of \$100.00. The *NEW CHURCH PRESS* (of New York) wrote that they did not feel in a position to subscribe for any copies of these treatises owing to the depreciation of their real estate investments. The *ACADEMY OF THE NEW CHURCH* agreed to subscribe for fifty copies of each work. The total amount assured by these subscriptions amounted to \$360.00, and justifies the Board in going ahead and pushing to completion the publication of the two treatises.

Some years ago our late President, Dr. Sewall, announced

that Mrs. Emily F. Barnes, of Nashua, New Hampshire, had offered to the Association for the furtherance of its uses the proceeds of the sale of an island in New Hampshire. After the death of Dr. Sewall we sent a letter of inquiry to Mrs. Barnes in regard to the present status of this offer. From her reply we learned that unfortunately she got the impression that her offer to Dr. Sewall was not accepted by the Association, and that since the time that it was made her family had become much attached to the island. She showed her interest in the work of the Association however by inclosing with the letter received from her a check for \$25.00 to add to the fund for the publication of Swedenborg's works.

7. On motion it was agreed that the Report of the Board of Directors be received and filed.

8. The **Treasurer's Report** was presented as published on page 247. On motion it was resolved that the Report be duly accepted and filed when audited.

9. The Chair appointed Dr. F. A. Boericke a Committee to audit the Treasurer's Report.

10. The **Editor of the New Philosophy** made a verbal report and asked the privilege of writing a report later to publish with the Transactions of the Annual Meeting. See page 248.

11. Great appreciation was aroused by the Editor's report, and it was resolved on motion that the Editor be granted the privilege of writing out his report for publication in the **NEW PHILOSOPHY**.

12. The **Committee on Nominations** reported the following nominations: for *President*, the Rev. Lewis F. Hite, and for *Directors*, Dr. F. A. Boericke, Professors Reginald W. Brown, C. E. Doering, and Alfred Acton, and Messrs. B. A. Whittemore and Horace P. Chandler.

13. On motion it was resolved that the Secretary be authorized to cast a ballot for the nominees as officers of the Association, whereupon they were duly declared elected.

14. Bishop W. F. Pendleton expressed in most appreciative terms the valuable services which had been rendered to the Association by its late and honored President, and spoke of

the emotion with which he had heard of the departure of Dr. Frank Sewall to the spiritual world. Bishop Pendleton moved that the Association adopt and reaffirm the Memorial of the Board of Directors [published in the January issue of the *NEW PHILOSOPHY*] as the memorial of the Association, and that this action be communicated to Mrs. Sewall.

The motion being duly seconded was unanimously adopted by a rising vote.

15. On motion the Secretary was instructed to express to the *NEW CHURCH PRESS*, of London the *ROTCH TRUSTEES*, the *NEW CHURCH PRESS*, of New York, and the *ACADEMY OF THE NEW CHURCH*, the appreciation and thanks of the meeting for their financial aid, and for the encouragement which this aid means to the work of the Association.

16. The **Auditing Committee** reported that it had examined the Treasurer's reports for 1915 and 1916 and found them correct. On motion it was agreed that the report of the Auditing Committee be accepted and filed.

17. President Hite delivered the **Annual Address** on "Work accomplished and Work to be done." The address is printed on page 249.

18. Bishop W. F. Pendleton read a paper on the "Principia Doctrine of Creation," printed on page 254. The paper was a summary of Swedenborg's *PRINCIPIA*, and was enthusiastically received by the meeting. It was discussed at some length by Messrs. Hite, Brown, Doering, Acton, Iungerich, and N. D. Pendleton. All appreciated the advisability of having such a simple and at the same time comprehensive statement of the *PRINCIPIA* before the students of the church, and it was suggested that if the writer were willing the type for the publication of this paper might be held to be included as a section of the Primer of Swedenborg's Philosophy proposed by the late Dr. Sewall at the last annual meeting of the Association.

19. The meeting expressed its regret that time did not permit its hearing from Prof. Acton on the subject of "Books read and studied by Swedenborg."

20. On motion it was unanimously resolved that a vote of thanks be extended to the Trustees of the First New Jerusalem

Society for the hospitality so cordially expressed through the Pastor of the Society, the Rev. Charles W. Harvey, and for the pleasure experienced by the Association in meeting in such pleasant surroundings.

21. In presenting the foregoing resolution Prof. Acton spoke of the usefulness of the Scientific Association as an Association for the co-operation of those of different doctrinal affiliations, and of the pleasure felt in mutual expressions of willingness to work together for common ends. He expressed the hope that the meetings of the Association will prove that all Newchurchmen can work together in common uses. Pastor Harvey spoke further to the same effect, and said that he hoped that the meetings of the Association would be the means of extending mutual co-operation in the great work which the Association has undertaken. In response to the resolution Mr. Harvey said that he felt that his society would appreciate it if the Association made it its custom to meet in its rooms regularly.

22. On motion the meeting adjourned at 5 P. M.

REGINALD W. BROWN,
Secretary.

OFFICERS OF THE ASSOCIATION.

At a meeting of the Board of Directors held after the adjournment of the Annual Meeting the following officers were elected:

Vice-President, Dr. Felix A. Boericke.

Secretary, Prof. Reginald W. Brown.

Treasurer, Prof. C. E. Doering.

Editor of the NEW PHILOSOPHY, Prof. Alfred Acton.

REGINALD W. BROWN,
Secretary.

TREASURER'S REPORT.

RECEIPTS.

Dues	\$246.47
Subscriptions	118.42
Contributions	36.00
Net sale of publications	19.91

 \$420.80

Balance, 5-13-16	200.59
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 \$621.39

EXPENDITURES.

Rental of hall for annual m't'g. . .	\$3.75
Binding "Senses"	22.45
Paper for "Fibre"	252.30
Printing 4 nos. NEW PHILOSOPHY. .	172.43
Printing Pres. Annual Address... .	3.20
Cover paper NEW PHILOSOPHY... .	13.20
Sundries	21.96

 \$489.29

*Balance, May 24, 1916	132.10
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621.39

*Includes Royal Academy Publica- tions	\$10.00
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*Includes Royal Academy Plate... .	2.00
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 12.00

Dues unpaid for 1916 only.....	\$60.00
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Subscriptions unpaid for 1916 only.	38.00
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Subscriptions unpaid for 1915-16.	20.50
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Dues unpaid for 1915-'16.....	33.00
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Dues unpaid for 1914-'15-'16.....	9.00
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Subscriptions unpaid for 1914-'15- '16	6.50
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 167.00

The statement shows a balance of \$132.10, but there are unpaid accounts estimated at \$500.00 connected with the publication of the SENSES and the FIBRE for which bills have not yet been received.

May 24, 1916.

C. E. DOERING, *Treasurer.*

 Audited and found correct.
F. A. BOERICKE, *Auditor.*

REPORT OF THE EDITOR OF NEW PHILOSOPHY.

Since my last report five numbers of the *NEW PHILOSOPHY* have appeared, these including the April issue for 1915, which was not out at the time of the last annual meeting.

These five issues have comprised 166 pages. Omitting the 22 pages of the *Transactions*, this makes an average of 33 pages for each issue. Still omitting the *Transactions*, which also include the President's Annual Address, the issues have included Editorial articles 22 pp.; *Translations* 34 pp.; Miss Beekman's *Physiological Papers* 77 pp.; other contributions 11 pp.

The translations comprise the work on the *FIBRE*, which is now finished, and *THE WAY TO A KNOWLEDGE OF THE SOUL*, and *FAITH AND GOOD WORKS*,—these being the first two tracts contained in what is known as the "Posthumous Tracts."

An unusually large number of pages has been given to the *PHYSIOLOGICAL PAPERS* in order to complete the ninth and last Paper which could not well be divided into small installments. After the printing of some charts or Tables, which will appear in our July issue, this remarkable series of *PAPERS* will be concluded, and as soon as the editor can prepare an index they will be published in book form. It may be of interest to note that the series was begun in April, 1912, and has been running for four years.

I regret that as yet I have not been able to do the editorial work (including an index) necessary to the separate publication of *THE FIBRE*. The whole of the text has been finally revised and is in the hands of the printer; some work has also been done on the index, and the book should certainly be published within a year.

THE SENSES has now been published in book form with an index of 40 pp., prepared by the Rev. W. H. Alden. It has been bound uniform with *GENERATION* and makes a very attractive volume.

ALFRED ACTON.

THE PRESIDENT'S ANNUAL ADDRESS.

BY THE REV. LEWIS F. HITE.

WORK ACCOMPLISHED AND WORK TO BE DONE.

It is with peculiar diffidence and with no little embarrassment that I find myself for the moment in the official position of our late most worthily honored and most affectionately admired President, the Reverend Doctor Frank Sewall.

Doctor Sewall's work as President of this Association was of such conspicuous importance and his memory is so lovingly cherished by us all that it seems an imperative duty and a rare privilege to recount in this address some of his more characteristic services in and for this body during the seventeen years of his presidency.

Doctor Sewall's temperament, attainments, and cultivated Newchurchmanship fitted him singularly for taking the lead in bringing Swedenborg's Scientific and Philosophical works to public attention and appreciation. In an article written early in March, 1898, he projected the work which such an Association might undertake, and surveyed the conditions which seemed to make the undertaking timely. In both these respects his words were prophetic, and revealed both his interests and his insight. His views, and also his zeal and his convictions, were further developed in his first presidential address. His words are well worth recalling for they were afterwards embodied in the language of our constitution. He said in substance: The use before us would seem to be the republishing of those works already translated but now out of print, the translation and publication of works hitherto unpublished, the preservation in photolithograph copies of the works now existing only in manuscript. To this work of publication must be added the study and the widest possible diffusion in the scientific world of the principles laid down in these works. They cannot accomplish their end in silence and isolation. They must be proclaimed and brought into the most direct and familiar contact with the science of the day in all its phases. This can be done by the study of the works by

qualified specialists, by the publication of treatises in a suitable periodical or formal transactions, by articles critical or otherwise in the current scientific and philosophic journals, and lastly by a well-equipped and endowed Academy of Science and Philosophy.

This is a generous and worthy program, and it is the purpose of this address in part to indicate how well it has been carried out. A glance at Dr. Sewall's annual presidential addresses will show that they are admirable epitomes not merely of the actual work accomplished, but also of the scientific and philosophical spirit of our body. The range and variety of scientific and philosophical interest displayed in these addresses are extraordinary and at the same time thoroughly characteristic of the inspiring catholicity of the man and of his enthusiastic devotion to the cause of the New Church and its progress in the world. It was like drinking annually from the fountain of youth to listen to his vivid surveys of scientific and philosophic approach to Swedenborg from the outside world of scholars, as well as to his own exalted expositions of Swedenborg's philosophy. A glance at some of the titles of these addresses will remind us of the extraordinary breadth of interest which characterized Dr. Sewall's intellectual life, as well as of the range and variety of the topics which he made the objects of his study. For consider the significance from the point of view of the work of this Association of such titles as "Swedenborg's Contribution to Science," considered in relation to modern recognition; "Worship and Love of God," and the philosophy of Nature which it inculcates; "Swedenborg's Doctrine of the Purer Parts of Nature," and its relation to present day problems; "Spirit as Object;" a metaphysical inquiry as to the objectivity of the spiritual world; "Swedenborg on Life in other Planets than our own," with some reference to contemporary scientific opinion; "Modern Pragmatism and Swedenborg's Doctrine of Degrees," with special reference to the philosophy of Wm. James; "Swedenborg and the Modern Doctrine of Reality;" "Svante Arrhenius on Emanuel Swedenborg as a Cosmologist;" "Is the Universe Self-centered," discussed with special reference to the philosophy of

Eucken and Bergson; "The Only-Begotten in Swedenborg's Cosmology and Theology." In his treatment of these topics Dr. Sewall shows a growing appreciation of the immensity of the task which this Association has undertaken, the task of comprehending and expounding the philosophy of Swedenborg. In spite of his invincible optimism and his triumphant zeal, we trace in what we may consider his final effort to grasp and to set forth the essentials of this philosophy, that is, in the Essay, "Being and Existence," a sense of this immensity. Perhaps it was his growing conviction that both we ourselves and the outside world must approach Swedenborg in the way of outline rather than with systematic comprehensiveness and thoroughness, that he proposed in his last presidential address a "Primer of Swedenborg." But however this may be, we should take the proposal to heart and make this "Primer," as his last will and testament, a worthy memorial of Dr. Sewall's philosophical labors.

Turning now to the task immediately before us, it may be well to point out that we have been making progress along three distinguishable though related lines of effort, in fact along the three lines at first projected by Dr. Sewall in his opening presidential address: 1. The preservation, translation and publication of Swedenborg's Scientific and Philosophical works, 2. the founding of a periodical which should be the organ of the Association, and 3. the study, exposition and promulgation of the philosophy contained in the works. The second object has been accomplished in our quarterly magazine, *THE NEW PHILOSOPHY*, whose pages show how well the other objects have been pursued.

When we remember that at the time of the organization of this Association Swedenborg's Scientific and Philosophical works were for all practical purposes out of print, and then cast a glance at the present situation, we have reason for much satisfaction. Now we have the new editions of *THE PRINCIPIA*, *THE INFINITE*, *THE ECONOMY OF THE ANIMAL KINGDOM*, *THE RATIONAL PSYCHOLOGY*, *WORSHIP AND LOVE OF GOD*, *THE ONTOLOGY* and *GENERATION*, all indebted more or less to the activities of this Association. The work of transcribing,

photolithographing, and translating Swedenborg's scientific MSS. has gone on steadily and successfully, and the publication has followed. As a consequence, some of the most valuable of Swedenborg's studies in physics, physiology, and psychology, have been for the first time made accessible to the reading public. Among these may be mentioned the LESSER PRINCIPIA, THE SENSES, THE FIBRE, various SCIENTIFIC AND PHILOSOPHICAL TREATISES. For these, with the exception of the LESSER PRINCIPIA, we are indebted directly to the members of the Association. In addition to these published works there is a considerable body of transcripts made by members of the Association ready for translation and publication. But still more important is the monumental edition of Swedenborg's Scientific and Philosophical works now under way by the SWEDISH ROYAL ACADEMY OF SCIENCES. This when completed will place these works before the learned world in suitable dress. The part taken by the SWEDENBORG SCIENTIFIC ASSOCIATION in this splendid edition will ever be a historic memorial of its usefulness.

In view of these results it may be said that students of Swedenborg have ready access to much the larger part of all that Swedenborg has written on scientific and philosophical subjects. But those who are especially interested in the philosophical side of Swedenborg's early activity, will note with keen dissatisfaction that there still remains in MS. much important material of the kind indicated by the titles, "Notes on Wolf's Psychology," "Comparison of Wolf's Ontology and Principia," "Notes on Metaphysics," "Philosophical and Theological Notes." To understand the historical relations of Swedenborg's philosophy, especially his early philosophy, a familiarity with this material is indispensable, and it would seem to be the next duty of the Association to afford professional philosophical students ready access to this early period of Swedenborg's philosophical activity. One disadvantage under which Swedenborg labors as a philosopher is that he seems to professional students so remote from the main current of historical development. If his relation to Wolf and to the philosophy of his day were clearly set forth, there would be less excuse for the

ignorance and neglect which histories have exhibited. But for our own reading and enlightenment, and especially for our own power of historical interpretation and exposition, in short, for the fulfilment of the third division of our task, the promulgation of the philosophical principles of our author, it is imperative that we should completely master the historical relations here involved. We should be powerfully stimulated in this direction by the pioneer work of MR. A. H. STROH; and the valuable articles which have appeared from his pen from time to time in the *NEW PHILOSOPHY* may well be considered our first step towards acquiring and promulgating a competent knowledge of Swedenborg's place in the general movement of history. Is it not plain that Mr. Stroh beckons us on to just this task of transcribing, translating, and publishing the works above referred to. Then would come the further duty no less imperative of studying and expounding.

The pages of the *NEW PHILOSOPHY* show that we have been alive to this duty. The articles by MISS LILIAN BEEKMAN, PROFESSOR REGINALD W. BROWN, and others, are material contributions to this work of exposition, and they vindicate this department of the Magazine's usefulness. It was no doubt a correct impulse and insight which led the Association to make its organ first and foremost the vehicle of translation. In the nature of the case this purpose will be in time fulfilled, but the use of the Association will not cease therewith. There will remain the permanent and in a sense the higher use of organized and co-operative study, exposition and promulgation. We must, therefore, look forward to the time when the *NEW PHILOSOPHY* will have to be enlarged, when the contributions will be more elaborate and exhaustive, when the Association will furnish a larger number of zealous, trained, and enlightened students and writers. In a word may we not look forward to the time when this Association will realize Dr. Sewall's dream of "a well-equipped and endowed Academy of Science and Philosophy?"

THE PRINCIPIA DOCTRINE OF CREATION.

BY BISHOP W. F. PENDLETON.

In the *PRINCIPIA* Swedenborg proposed to enter into and explore the interiors of nature, or nature in her invisible operations, such as are hidden from the view of the bodily senses; nature in her beginnings such as cannot be reached even by the microscope or by chemical analysis. Hence the name which he chose for the work, the *PRINCIPIA*, or the "Beginnings," or the title in full, *THE PRINCIPLES OF NATURAL THINGS*.

He wished to know the principles, the beginnings, or the causes of the natural phenomena which appear before the senses of the body; since these causes were invisible, he wished to adopt the proper means to reach this most desirable end; for the end is not obtained without means; and he considered that the means were at hand, and the time had come by the means now available to unlock the hidden mysteries of nature, to call upon her to reveal her secrets and to lay open her stores which she had kept concealed in her bosom since the time of the Golden Age when men knew by a prior way the arcana of the world, as they also knew the arcana of heaven. It was now necessary to enter by the posterior way to find the wisdom of the ancients, and this by the means which were at hand.

The means which Swedenborg found and made use of were in general three:—(1) Experience, (2) Geometry, and (3) Reason. Armed with these, together with a profound acknowledgment of the God of Nature, and with a humble reliance and trust in the Divine guidance, he proceeded on his voyage of exploration and discovery; something of the wonderful result obtained we shall endeavor to set before you.

First in regard to the means he used. *EXPERIENCE* he defined to be "the knowledge of everything in the world of nature, which is capable of being received through the medium of the senses." This had now become a vast store, the accumulation of some thousands of years, so that "an inquiry into the secret and invisible operations of nature need no longer be deferred."

GEOMETRY is the law of form and figure in all things of nature, or of all things which have measure or dimension, that is, which have limits or boundaries, and occupy position or space, or which have magnitude, height, length, and breadth. Under the empire of geometry, therefore, are all things of the three kingdoms, animal, vegetable, and mineral. There is also a fourth kingdom, which is under the empire of geometry, and to which the laws of geometry must be applied. This fourth kingdom Swedenborg calls the elementary kingdom, the kingdom of the elements of nature, or the kingdom of the atmospheres or auras of the world and of the universe, in which the secrets of nature are stored, as in her inmost recesses; it is this fourth kingdom which must be opened and explored, if we would penetrate beyond the veil of sensual appearances, and see nature as she really is in the germinal springs of her activities.

We have before us then two instrumentalities necessary for the investigation of the hidden causes and forces of nature, namely, experience and geometry.

But a third instrumentality is needed without which the first and second are inoperative, without which nature is seen only upon the surface, and it is impossible to enter into its mysteries; this third is the FACULTY OF REASON. This faculty is really the first in importance, and being implanted in the soul of man by God, lifts him above the sphere of nature and enables him to look down upon it, and arrange and set in order the facts of experience according to the laws of geometry. This faculty, being in the soul and of the soul, is most distinct from nature, is above it, is not under the empire of its laws. It is, therefore, not to be viewed from science but from Theology, since it is not formed or implanted from nature, but from the Infinite, and thus differentiates man from animal life, and from nature in general.

Armed, therefore, with the faculty of reason, conversant with the facts of experience, and instructed in the laws of geometry, man may proceed to investigate and explore the hidden things of nature. Swedenborg expresses astonishment that a knowledge of the invisible things of nature is hidden

from the learned world, notwithstanding the rich store of facts that has been accumulating for ages, notwithstanding a knowledge of the laws of geometry which we have inherited from the ancients, and notwithstanding the faculty of reason, a Divine gift to the human race; and yet nature remains as a sealed book, except in her manifest and visible phenomena.

Certain universal principles are necessary as a guide for entering into interior and invisible things; even as we read in the Writings that without Doctrine the Word is not understood; and it is with the book of nature as it is with the book of revelation, without doctrine or general or universal principles to guide, nature is not understood. And this doctrine must be true. False doctrine does not lay open and reveal the hidden things of the Word or of Nature, but obscures them. The importance of this Swedenborg saw early in his work, and he set about to find certain general doctrines that would act as a guide, or a kind of ship, as it were, in which he could sail in his explorations of the mighty sea of nature.

It is not our intention to enter here upon an examination of these general doctrines of nature, which Swedenborg developed; but it will be useful to refer to one of the most important of them, which is, that nature is the same in greatest and least things. Afterwards this was also revealed to him as a Divine law,—the Divine is the same in greatest and least things. But Swedenborg saw it first as a general law or doctrine of nature; and the importance of it, as a means of unlocking the hidden things of creation, cannot well be overestimated. Under it the invisible operations and conditions of nature are similar to the visible; that is, the invisible particles or simples of nature, those which are units of the compound, of the visible or larger parts of nature, are under the same general laws, as the visible and larger parts themselves. This is but a more universal and far reaching application of the principle recognized in geometry, that the law of the whole is also the law of the parts which make the whole; and though the minute parts or particles are invisible, the same law applies to them.

It cannot be said, therefore, that this law was unknown be-

fore, but a universal application of it was unknown; and it apparently had not occurred to anyone to use it in investigating the invisible things of nature. But under this law Swedenborg was able to see that invisible particles, those which are the simples and units of the greater which are visible, have, like the visible, position, magnitude, figure, weight, motion, and other attributes and qualities that are common to visible things; and that these invisible particles, like the visible, vary also in position, magnitude, figure, weight, motion, etc.

The principle then once established that nature is the same in greatest and least things,—that her invisible operations are similar to those that are visible, that invisibles are not under one law and visibles under another, and with other universal laws known and applied, it became comparatively easy for Swedenborg to enter upon, explore, and expound the deep things of the natural universe.

Now the invisible particles, which are the simples, firsts, or unities of the larger and visible hard bodies such as minerals and metals are not simple or undivided, are not atoms, but are really themselves compounds formed from the elementary kingdom; and although there is no such thing as an atom or a minute particle in any form which cannot be further divided, still every form is made up of units, which if destroyed, the form will be destroyed. But although the form will be destroyed, the unit is still divisible into parts, but into parts of a prior order or higher degree, and so on to the Infinite Itself. There is thus nothing created that is not still further divisible, and there is no such thing as an atom. The units of every form are for the most part invisible to the eye, but they still have form and figure, size, weight, are capable of motion and of still further division into parts; but as we have said, when the unit is divided, the form of which it is the unit or least, ceases to exist, and is resolved into its original or prior forms. But the unit is under laws similar to the form as a whole, is the whole in miniature, and performs all the functions of the whole of which it is the least part. The unit of every form is composed of particles from the elementary kingdom, compounded and compressed together; and when the unit is de-

stroyed, the parts are set free and return to the elementary kingdom from whence they came. And the particles which make the unit still have form, figure, magnitude, weight, etc. Indeed the elementary kingdom, being the internal and source, has by composition and compression made the units of all forms, has impressed its laws upon things visible, according to the laws of cause and effect; and if we would know the cause we may learn it from the effect, or if we would know the simple we may learn it from the compound; thus we may proceed from the known to the unknown, and by means of visible nature explore the things of the invisible world.

Swedenborg saw, therefore, that in the elementary kingdom is to be found the kingdom of natural causes; and that the exploration of this kingdom, the kingdom of the atmospheres or auras, is most necessary in order to have any complete science of chemistry or physics, or any complete natural science whatsoever. But as this elementary kingdom, except in its outer boundaries, is beyond the reach of the microscope, of spectrum analysis, or chemical experiment, it can be approached and entered only through the eye of reason; and Swedenborg maintains that reason, following established and recognized laws, is more reliable, far more reliable, than the senses of the body, and is the only mode by which the elementary kingdom, or interior nature, can be entered and explored, its secrets unlocked and brought forth to view.

THE FIRST NATURAL POINT.

The beginnings or principles of nature are, therefore, to be found in the elementary kingdom. Now what are those beginnings? Swedenborg starts out with the assertion that the beginning of nature is identical with the beginning of geometry, that is, it begins with the point, to which he gives the name of the FIRST NATURAL POINT. Geometry is not a mere dead physical law, but a living acting operation in nature; and the science of geometry is not only the science or law of form, but the science or law of motion. Every operation, every activity, every series in nature, begins from a point or center. There is no motion, no production of form, no proceeding to

use, that does not begin in an active center, or in what is termed in geometry a point. And let it be remembered that such a point is not a dead inert atom, that cannot act but is merely acted upon. The point of Swedenborg, and the real point of geometry, is no such dead thing, but a living conatus or endeavor to motion, an endeavor that will become motion, a potency that will become action, whenever the conditions are favorable.

When the geometrical point or active center goes forth into motion, a *line* is produced; and we have only to suppose innumerable points and innumerable lines, and we shall have surfaces and substantial forms or masses as the result of their combination.

There is not a form or existence in nature that does not begin from a point or an active center. This is observable to a marked degree in the vegetable and animal kingdoms. Everything in these two kingdoms, as is well known, begins from a minute point or active center, which may be called a seed; and the human body itself has its beginning in the minute glands or cells, which are like seeds or points in the brain. From these points in the brain proceed lines which are fibres and these compounded together make the nerves, and finally the solid mass of the body.

Swedenborg, therefore, concluded that since everything visible in nature has its beginning in a point or active center, there must be universally in nature a first, a beginning, a unit, a simple, an active center or a point, which is the beginning or first of creation, and in which is the universal conatus of all nature. He also concluded that since no point or active center in nature produces itself, but is produced by that which is prior to itself, neither is the first point of nature produced from itself, but from the only thing that is prior to itself, and this is the Infinite. Since it is from the Infinite, the Infinite is in it, and thus the first natural point is not a dead but a living thing, having within it life itself, all conatus, the spring of all force, the tendency to all motion.

Swedenborg does not, as has been supposed, nullify the doctrine of the PRINCIPIA when in the TRUE CHRISTIAN RELIGION,

n. 20, he condemns the doctrine of points. He is speaking there of the dead, inert point, called also the atom, not of the living first of nature, which is immediately from the Infinite, in which the Infinite is, and by which the Infinite creates all things of the universe.

He says of the first natural point, the first primal potency of nature, that it is produced by motion from the Infinite; that it is intermediate between the Infinite and the finite, and thus partakes of the nature of both; it, therefore, has but one limit or boundary. This seems to mean that it is still in itself Infinite, but is in the process of accommodating itself to what is finite—not wholly created, not wholly finite, but putting itself into a position to enter into and produce all created and finite forms. It is a beginning but as yet has no boundary in nature; there is in it an endeavor to finiting, but it is not as yet a finite; it is, as it were, a *conatus* without force and motion, and so has not yet taken on a finite form; hence he says it consists of pure motion, which is motion itself, or motion in itself. Hence the first natural point has no existence or subsistence in the created universe, but still it is the first cause of all created things, and enters by composition into the first finite or first substantial of creation.

THE FIRST FINITE.

The first finite is the first substantial, or first created substance. It originates by motion and composition among the points; for nothing is produced without motion and the motion by which the points are compounded together to produce the first finite, or first created form, is a spiral motion. The first finite is not only the first substantial or first created substance, but it is the least or smallest of all created things; it may be said that this is the only substance of the created universe, and there is no other; for all other first or created forms are no other than compounds of this first substantial of the universe.

THE FIRST ACTIVE.

The first finite, however, does not remain or exist in created nature as an inert or inactive form. It has motion and the motion is the threefold, that is, it has axillary or central

motion, progressive motion, and local motion. Axillary motion, or motion around its axis, becomes what Swedenborg calls central motion, or motion around the center, when the axis changes at every point. Progressive motion is motion among the parts that make the form, a kind of circulation, as it were. Local motion is motion of the whole form through space, as a ball travels when it is thrown into the air. The first finite or substantial has these three forms or modes of motion, and the other finites which follow have the same. A finite in a state of motion becomes what Swedenborg calls an active; and the first finite in motion becomes the first active.

THE SECOND FINITE.

The second finite originates from the first finite, or is compounded by motion among the first finites; that is, a large number of first finites combine together to make a new created form or particle, and this new form or particle is called the second finite. Thus another substantial comes into existence, in all respects similar to the first, except that it is more of a compound, and is of greater dimension.

We have now two distinct created entities, namely, the first finites, which have become actives, and the second finites compounded of the former. These two are now to be seen as united to produce a third form, and this third form, produced by a union of the actives of the first finite with second finites, is called by Swedenborg the first element, the first aura, or the first atmosphere, also the first or primal ether.

THE FIRST AURA.

This brings us to the third entity of the created universe, the elementary particle. This elementary particle is the unit or individual part of the first or universal atmosphere. It may be said that the elementary particle is the first tangible entity, or first complete form of the universe, because it is the first that consists of both an active and a passive, an active center and a passive or reactive circumference. In the elementary particle actives of the first finite make the center an active center; but this active is enclosed about by a wall, a shell, or circumference of second finites.

There is indeed, before the elementary particle comes into existence, an active and a passive, the active of the first finite and the second finite; but these exist, as it were, separately, and are not yet combined so as to make one form. In fact, creation cannot be said to be complete until there is a union of an active and a passive, or as we say on the plane of spiritual things, until there is a marriage of good and truth. Good is the active and truth the passive, or good is the active center, and truth the reactive circumference. When there is this marriage or this union then there is a complete form, a stable equilibrium, and not before. There is in fact no equilibrium in nature until the actives and the passives are thus united, or until the elementary particle is formed, composed of an active internal and a reactive circumference. Until this, creation is not at rest, and there is as yet no universe; for the first aura is the universe. Nor would there be a medium for the transmission of light. A finite cannot transmit light, so there could be no light from the stars without this common universal medium; nor would creation be a unit.

Until there are these two units, the active and the passive, making the universal element or atmosphere, embracing both worlds, forming and constituting the solar vortices, filling the whole space of the starry heaven, no natural sun can come into existence, thus no earths with inhabitants upon them, and hence no heaven of angels formed of men. But creation must go on; other actives and other finites must be formed, and the natural sun itself, together with systems and worlds, and the material earths of the universe, fit for the abode of men, in preparation for the angelic heaven,—the last in order of time, but the first in the Divine end for which the universe was created. And so, when the first or universal element comes into existence there may be other actives and other finites, down to the lowest and last, even to the material earth itself. But we have now the first active and the second finite, and these united, preparing the way for the next step in the creation process, which brings into existence the second active.

THE SECOND ACTIVE.

The second active is nothing else than the second finite in a state of motion, or free activity. And since there is now a second active, a second elementary may be formed, as soon as another finite comes into existence to become its crust or encompassing wall, with second actives forming its active center.

THE THIRD FINITE.

A third finite is now called for in the order of creation. The primitive sun, which in reality is the spiritual sun, is now in existence. For the spiritual sun is also a created form, being itself as it were an immense elementary. In the midst of this elementary is Jehovah God Himself, surrounded by this mighty throbbing and pulsating sphere, which is the first of creation,—the sun of the angelic heaven, the center of the universe, from which proceeds the first or universal aura, or the aura which makes the universe.

It may here be remarked that it is impossible for us now to say when Swedenborg first perceived the existence of a spiritual sun. He speaks of it plainly in some of his later philosophical works and it must of necessity have a place in the *Principia* system of creation. A recognition of it there is essential to an understanding of that work. In this, as in a number of other things, prophetic glimpses were given to Swedenborg of things he was to see face to face when the spiritual world was opened to him.

As to the third finite, it is the beginning of the material universe, and constitutes the fiery mass of the natural sun, as it is visible to our eyes. When this fiery mass of third finites exists, the second aura, called the magnetic aura, may come into existence, and go forth to constitute the solar system.

THE SECOND AURA.

For nothing exists that does not send off a sphere that is similar to itself, every particle of which is the image of its parent; and every particle of the second aura is the image of its parent sun, having third finites as its encompassing crust or wall, with first and second finites constituting its active center.

It will thus be seen that particles which make the substance of the primitive or spiritual sun constitute the active center of this second elementary, with particles from the mass of the natural sun for its crust or wall; and it is here where the spiritual and natural creation come together and are united as one, that is, in the particle of the second elementary.

It should be explained, however, that the third finite, which is the first of the material universe, comes into existence by the compression of the particles of the first or universal aura. When these particles, or those of the first aura, are compressed, the first actives which constitute their internal active space are as it were pressed out, leaving the second finites which formed their passive circumference without an active center. These second finites, so left, unite or combine, or many of them come together, to form a new finite, which is, as we have seen, the third finite, making the sun's mass, the beginning of nature proper. Being without an active center, this third finite is what is called in the Writings dead, and causes the natural sun to be called a dead sun. Its particles are, therefore, hard and resisting, and they are the first of the series of the hard particles of nature.

As was said, the second or magnetic element now comes into existence. The particles of this element are the natural sun in an image surrounded by a crust of third finites, with particles from the spiritual sun, the first and second actives, as their active center; and so in the second or magnetic elementary particle the spiritual and natural worlds are joined together with them. It is this second element or aura that makes the solar vortices or solar systems of the natural universe.

THE FOURTH FINITE.

But the work of creation must go on; the Divine creative work does not stop in the middle; it must proceed to the ultimate where it must rest, terminate, react, and return. For all creation must cease somewhere, and begin its return journey to God its Creator, and thus complete the work of creation in forming a heaven from the human race. For heaven is not created in the outgo, but in the return to God the Maker of all things.

And so the fourth finite now comes into existence. As the third finite is from the first elementary, so the fourth finite originates from the second elementary particle, the particle of the magnetic aura. As the internal active vanished from the first elementary particle by compression, leaving the second finites free to combine and form a third finite, so now the internal active vanishes from the second elementary particle, or particle of the second aura, in like manner by compression, leaving the third finites which make its crustal envelopes, free to combine in the formation of another finite which is called the fourth finite. A number of third finites, so set free, unite to form another particle, which is the fourth finite or substantial in the order of creation. It is important to remember that each finite, being formed of a number of finites immediately preceding in the order of succession, is of greater dimension than the one immediately preceding it, and so on down to the last in order.

This fourth finite being passive and relatively inert, like its predecessors, can constitute the surface of an elementary particle; by means of it a new element aura, or atmosphere, is now to come into existence, called the third element or the ether.

But as the fourth finites are passive, relatively hard and inert, and of greater dimensions than the preceding finites, they cannot be taken into the sun; since they are near to it, and around it, and increase its mass and gradually form an incrustation around the sun, they must of necessity be finally driven further away. This incrustation or shell of fourth finites around the sun, was called by the ancient philosophers the great chaos or egg from which all things were created. And indeed this crust or egg did finally break up, and into immense masses sent forth to the peripheries of the solar system, there to gyre in a perpetual orbit around the sun as a center.

When this incrustation of fourth finites around the sun finally broke, masses of three kinds were sent forth; namely, planets, satellites, and certain erratic bodies still spreading around the sun which go by the name of sun spots, and which are there in varied and ever changing formation to this day. Into the after-history of the planets and satellites we have not time to inquire now, but must proceed briefly with the subject of the ethers.

THE THIRD AURA.

As we have said, a third element, the third aura, the luminiferous ether, now comes into existence. This third aura which is known commonly as the ether, is formed by means of fourth finites, at the surface of the infant earth. For as yet there are only two elements, the first or universal aura, and the second or magnetic which makes the solar systems, and in addition to these a mass of fourth finites making a primitive earth, on and around which there was as yet no ether, no air, no water or watery vapor, no clouds, no primeval ocean, no earth's crust,—with the fourth finites on the surface exposed to the action of the higher atmospheres.

The first element or universal aura, acting upon the surface of the newly made earth, sets free fourth finites in large number; and elementary particles of the first aura gather around them fourth finites now set free, and the third element or third aura is formed. It is formed near the earth and is an atmosphere of the earth, and the earth is in the midst of its vortex. The particle of this third ether is thus constructed of particles of the first element within, now as actives, and the crustal envelope of fourth finites drawn from the surface of the earth. This is the particle of the luminiferous ether.

THE FOURTH ELEMENT.

Another ether, the fourth in order, is now formed also near the earth. This fourth ether, which is the common air, is formed in a manner altogether similar to the third ether. It is formed near the earth by the action of the second or magnetic element on the earth's surface. But in this case the fourth finites set free from the surface of the earth, combine together, a large number into one, and the resulting compound is another finite called the fifth finite—a finite of a lower degree, and a larger dimension than the preceding. These are gathered around particles of the second aura, which become active, and in this manner the fourth element, the fourth aura, or the common air is formed,—particles from the second aura making the active internal, and fifth finites formed, not as the others near the sun, but near the surface of the earth, making the crustal envelope.

WATER.

Next in order comes water or the material finite. The water particle is the same as the air particle highly compressed. As in the case of the previous finites, which arise from the compression near the sun or near the surface of the earth, the air particle under great pressure loses its internal actives of the second aura, and the water particle or material finite is the result. The water particle is thus smaller than the air particle and goes where air will not. It is hard and inert, having no internal active like the particles of the aura. The atmospheres or the auras are the forces of nature, but water is an intermediate force, being the last in the order of fluids; it is in itself hard, and when the interfluent ether, which keeps the particles apart, is removed, it is seen as ice.

Next comes the primeval ocean, an ocean of mighty depth around the whole earth, an ocean without a shore. When this immense ocean is in existence, there arises from its surface watery vapor, or a watery atmosphere. This is only a quasi elementary, not a genuine atmosphere; but since it resembles an atmosphere it may be treated as such, and in this case it would number as five in the order of elements. It is like an atmosphere in this, that the vapor particle has in it as an active internal, particles of ether; but it is not like an atmosphere in this, that its crustal envelope is made up of the material finite, or the hard and inert water particles.

At the bottom of the primeval ocean, by the crushing of the water particles, the salts and other mineral substances are formed, constituting the beginnings of the mineral kingdom. This kingdom appears in the form of islands and continents, with the gradual subsidence of the waters of the great ocean which at first covered the whole earth. The vegetable kingdom may now be formed, the animal kingdom may now come into existence, and finally man in whom is to be fulfilled the end for which the universe was created.

THE WORSHIP AND LOVE OF GOD.

A REVIEW BY THE EDITOR.

THE WORSHIP AND LOVE OF GOD, by Emanuel Swedenborg. A revised and completed translation, including the Third Part now first published and translated into English from the Latin manuscript, by ALFRED H. STROH, A. M., and FRANK SEWALL, A. M., D. D. Boston. Published by the trustees of Lydia S. Rotch, Massachusetts New Church Union, 134 Bowdoin Street, 1914. (Pp. 292. \$1.00.)

In a letter to OETINGER, dated November, 1766, Swedenborg, in answer to the question, "Why from being a philosopher I have been chosen," states among other things: "I was introduced by the Lord first into the natural sciences, and thus prepared; and indeed from the year 1710 to 1744 when heaven was opened to me" (2 *Documents*, 257). The year 1744, therefore marks the great turning point in Swedenborg's career; the division between his work as a philosopher and his work as a Revelator; the closing of the one, the opening of the other.

In view of this fact, there is something peculiarly appropriate in the circumstance that in this year, 1744, Swedenborg commenced his work on the WORSHIP AND LOVE OF GOD, the first two parts of which he published in the following year; for this little book contains, in concentrated essence and clothed with a garment of poetic beauty, the whole of that "natural philosophy," the study whereof was commenced in 1710.

The work opens with a brief account of the creation of the world and its three kingdoms. It then proceeds to its main subject,—the creation of Adam from heaven-born seed, his education by the celestial Intelligences and Wisdoms, his meeting with his consort (whose creation and education are also treated of at length), their marriage, and, finally, in Part 3, their married life culminating in a heavenly vision portraying the conjunction of man with the Creator as the crown of His work.

The author's doctrine of the creation of man from seed formed by the Creator from materials furnished by the vegetable kingdom,—a doctrine that is distinctly unique,—has generally appealed to thoughtful students of his theological writings as being the most logical and rational doctrine on the subject that has ever been advanced. But to those who have studied also the author's philosophical works, this doctrine is seen, not only as a doctrine of compelling appeal, but also as the legitimate and only logical fruit of the earlier studies, bringing, in fact, all those studies to a focus in a picture of the End of creation. And in the *ADVERSARIA*,—the book that marks the commencement of that second period of Swedenborg's life "when heaven was opened to me"—this crowning fruit of his philosophical studies, the *WORSHIP AND LOVE OF GOD*, is affirmed as being in entire agreement with the Word of God (*Hist. of Creation*, 9, 10).

The importance of the *WORSHIP AND LOVE OF GOD* to the student of Swedenborg has always received more or less of recognition from members of the New Church. As early as 1779 it was included by Dr. Beyer among the works covered by his *INDEX INITIALIS IN OPERA SWEDENBORGII THEOLOGICA*. An English translation, probably by Robert Hindmarsh, was commenced as a serial in the *NEW MAGAZINE OF KNOWLEDGE* (1790, 1791), and was reprinted and brought to a conclusion in the *AURORA* (1799-1801) after which it was published in book form (1801).

As an indication of the untiring energy of the earliest students of Swedenborg, and of their enterprise in the face of great difficulties, this first English edition is a work of note; but as a translation it leaves much to be desired. The sense is indeed, so far as we have examined, correctly rendered, but the beautiful and poetic vein of the original is largely lost in the close and didactic style affected by the translator.

This fault was wholly remedied in the second English translation which was made by the accomplished scholar, John Clowes, and was published in 1816, and again in 1828, 1832, 1864, and finally "with a few alterations" which were all in the nature of improvements, in 1885. Mr. Clowes' transla-

tion was an eminently satisfactory one. Its occasional (not frequent) errors, omissions or redundancies, are quite minor in comparison with the smooth and rhythmic flow of the diction which so charmingly reflects the poetic style of the original.

Unfortunately Mr. Clowes' work was necessarily incomplete since it did not include Part 3; indeed, it is questionable whether Mr. Clowes knew that such a Part existed. As a matter of fact, however, the author had actually commenced the printing of this concluding portion of his work. For among his papers were found 15 pp. of proof-sheets of Part 3, and also an incomplete manuscript continuation of these sheets together with sundry drafts of a still further continuation. Whether this Part was actually completed by the author is not known, but it would seem probable, since he would hardly commence printing before completing at least a first draft.*

In addition to the new material thus noted there was also found among the author's effects his own copy of the printed work on which, in Part 1, he had written copious indicative marginal notes.

The existence of this new material led Mr. A. H. Stroh to propose to the SWEDENBORG SCIENTIFIC ASSOCIATION, some seventeen years ago, a new edition of the *WORSHIP AND LOVE OF GOD* which was to be complete, and in which Clowes' translation was to be revised. The proposal was heartily adopted

*It merits note in this connection that while the style of the Latin as contained in the printed proof-sheets (nos. 111-119) is highly poetic like that of Parts 1 and 2, the style of the manuscript continuation is as simple and unadorned as that in any of the theological works. Possibly, the author wrote his first draft in a simple style, but in preparing it for the press greatly elaborated this style. The matter can per-

haps be decided by reference to the original MS., which commences with the latter part of n. 117 and runs to n. 131, and which therefore covers a portion of the part in printed proof, *i. e.*, nos. 117-119. Unfortunately, in photolithographing the MS. Dr. Tafel included only that part which was necessary to make a continuation to the printed sheets, namely, nos. 120-131.

and preparatory work was at once undertaken by Mr. Stroh, who enjoyed the comments and suggestions of Dr. Sewall. But it was fifteen years later, in the latter part of 1914, that the work was published. It is this work that now lies before us.

This latest edition of the *WORSHIP AND LOVE OF GOD* shows several signs of lack of editorial care, owing doubtless to the fact that Mr. Stroh's severe illness, and his continued absence from America, induced him to resign the final oversight of the work into the hands of Dr. Sewall who had but little time for the mastery of many little details, to say nothing of the preparation of an Index.

In the preface no mention is made of the source of the marginal notes to Part 1; nor is any reason given why they cease with Part 1. In Part 1 the translator's subdivisions of the longer paragraphs are indicated by marginal numbers only; but in Part 2 they are also made into separate paragraphs. From the middle of n. 95 onwards the subdivision numbers are omitted, though the division into paragraphs still continues; except that in n. 108 the last three lines are marked as subdivision 3, though there is no preceding "2" and the whole paragraph contains only 25 lines. We note also that in Part 3, while there is a Chapter "I" (p. 259) and "III" (p. 274) but there is no chapter "II;" according to the MS. this should be at n. 121 (p. 263).

In this connection we would suggest that in a second edition of the work the paragraph numbers be printed as page headings,—an improvement essential to any easy use of the book as a work of reference.

The translation of Parts 1 and 2 is a revision of Mr. Clowes' work. In a number of cases this work is improved as regards the matter of accuracy, and we note in this connection the substitution of "fruit tree" for Clowes' "apple tree;" "fruit tree" is the correct translation of *pomus*, and its adoption immediately disposes of the fiction that Swedenborg describes man as being born from an apple tree. On the other hand, the reviser does not seem to have well ap-

preciated the linguistic charm of Clowes' diction, for not infrequently he has made changes which, while bringing no advantage as regards accuracy, constitute an undoubted loss to the beauty of the style. Thus "carried on high" is substituted for "wrapt on high" (n. 56); "without it it would be," for "without this it would be" (n. 74⁷); "that that disorderly crowd" for "that this," etc. (n. 74¹¹); "heavenly and earthly" for "celestial and terrestrial" (*passim*),—though in this last instance Clowes is sometimes retained. Changes affecting the word "only" are particularly unfortunate, as where (Nature is) "only made to be subservient" is substituted for (Nature is) "made only to be subservient" (n. 69³); "allow us only to engage a moment of your time" for "to engage only," etc. (n. 74⁸). There is noticeable inconsistency in regard to the word "principle" as introduced by Clowes in translating Swedenborg's neuter adjective used as a noun. In many cases this word is retained by the reviser, in others it is omitted, and in others again it is changed to "beginning." Thus "Highest beginnings" is substituted for "supreme principles" (*suprema*) (n. 90⁴), though later in the same number "supreme principles" is retained (90⁷); "His highests to our inmosts" for "His highest principles to our inmost" (n. 56³). On the other hand, whenever the word "principle" is introduced by the translator into the marginal notes, it is always put in brackets, as on p. III "our inmosts (*sic*) and highest [principles]."

The reviser usually adopts the word "animus" in place of Clowes' "mind [animus]," but in one case, at least, (n. 89), he changes "mind [animus]" to "animus or sensual mind" and, later in the same paragraph, "sensuous mind;" while "mind [mens]" he changes to "higher or intellectual mind."

There are several places where omissions inadvertently made by Clowes have been supplied in the revision, and this is certainly a desirable improvement; but we have noted seven cases where this has not been done. The most important of these is in n. 26³, where both Clowes and the reviser omit the passage "but that every abundance and quantity might stand in the middle like the balance of a scale;" other cases

are in nos. 26², 69¹, 91², 56^t, 90⁷, 89. In addition there are a number of omissions in the translation of the marginal notes and of Part 3. Thus in n. 112⁸ we read "arose a human body" which should be "arose a human body hitherto imprisoned but now released;" in n. 113a "proscribed as vile" for "proscribed as either nothing or vile." Other omissions are on pp. 254, 256, 66, 88, 186.

Frequently Clowes' translation has been retained where revision is manifestly needed as the following instances will show :*

CLOWES AND REVISER.

The celestials call them [*i. e.*, the intelligences of the animus] their friends, but *we* their sisters (n. 74).

The nerves being so distended by the operation of the mind (n. 87²).

Instantly there appeared to him a nymph (n. 87²).

(The soul) sitting alone *with the key* of her kingdom (n. 45²).

Nature is opaque, *nor is He transparent by His own light itself*, unless the hinge be turned (n. 56^s).

But the secondary vegetations of this kind, *or those which budded forth, not from the seed of the earth, but from their own*, ceased to be oviparous as soon as they were born (n. 26²).

In other cases the reviser has indeed altered Clowes, but without correcting his mistake; as in the following:

. CLOWES.

Those forms or substances are only *powers* or the first of organical powers which *derive living action from the rays of their life*.

REVISION.

Those forms or substances are only the first or the organic powers which *derive living action from the rays of their life* (n. 90⁴).

CORRECT TRANSLATION.

The celestials call them their friends, but *us* their sisters.

His mind so stretched the nerves.

Then in a dream there appeared, etc.

(The soul) sitting alone *at the helm* of her kingdom.

Nature is opaque, *nor does He shine through her save by His own light* after the hinge has been turned.

But secondary vegetations of this kind,—*whether they were from seed not the earth's but their own, or were new buddings*,—ceased to be oviparous, etc.

CORRECT TRANSLATION.

Those forms or substances are only *powers* or the first of organical forms which *live their life from the rays of Their life* [*i. e.*, of the life of the Supreme and His love].

*The italics in these and the following examples indicate the words or passage to which criticism is directed.

This inferior fountain of life was made a bond or instrument of spiritual connection.

Which afterwards hatched the seeds, . . . unlocked their still more interior windings, etc.

(The prince of the world was under the necessity) to execute obsequiously all the commands of our Deity; for that was the cause of his existence, and to continue the same, he is strictly restrained from being slain by the torments of his hatred . . . ; also from publishing any accounts of his own world; but by lies he would disturb all knowledge of truth, had not the Supreme known all and singular things before the creation of the world from Himself, and what would come to pass by infinite other ways.

For a spiritual principle itself communicated an image of itself to her corporeal form, viz., the mind [animus] . . . influencing the very texture of the muscular fibres . . . ; but the desires of the mind [men's] entered into forms still more perfect and more interior of the same fibres, which moreover represented themselves painted, according to every change, by variegations of white and purple, as by colors;

This inferior fountain of life was made a bond or means of spiritual connection (n. 74^r).

Which afterwards hatched the seeds . . . (but now) unlocked their still more interior windings, etc. (n. 26).

(The prince of the world was under the necessity) to execute obsequiously all the commands of our Deity; for that was the cause of his existence, and to continue the same he is rigidly restrained from being destroyed by the torments of his hatred . . . ; also from telling any tales of his own world; but by lies he would disturb all knowledge of truth, had not the Supreme known all and singular things before the creation of the world from Himself, and what would come to pass by infinite other ways (n. 69⁴).

For the spiritual principle itself communicated its image to her corporeal form, namely, the animus . . . influencing the very texture of the muscular fibres . . . ; while the desires of the mind entered into the still more perfect and more interior forms of the same fibres, which seemed to take on as if printed by colors in all variations from white to purple every least change. Finally, etc.

This inferior fountain of life was made a bond or spiritual connection.

Which, after they had hatched the seeds, . . . unlocked their still more interior windings.

(The prince of the world was under the necessity) of executing obsequiously all the commands of our Deity,—for that was the cause of his existence, and he is strictly forced to pursue the same lest he be slain by the torments of his hatred . . . ; and also of carrying narrations from his own world, —but by lies he would disturb all knowledge of truth, had not the Supreme known, by infinite other ways, all and single things before the creation of the world from Himself, and that they follow on to actuality.

For the Spiritual transcribed itself into her corporeal form. That is say, the animus . . . as is commonly the case, transcribed itself into the very texture of the muscular fibres . . . ; the desires of the mind into forms of the same fibres still more perfect and interior,—which desires, moreover, in accordance with every change, representatively depicted themselves by variegations of white and red

finally the loves themselves, *by similar rays of a kind of vital flame*, entered into these forms, which flame darted forth from the eyes . . . so that from the very face itself . . . the meaning of all her ideas and thoughts might, at one view, be . . . read by the eyes of another.

(same as Clowes) (n. 89).

(*purpura*) *as though by colors*; and finally into these forms, loves themselves *by means of rays like to a vital flame* darting from the eyes . . . so that from her very face . . . the meaning of all her ideas and thoughts could at one glance be . . . read by the eyes of the other (i. e., of the firstborn, *alterius*).

In some cases we have noticed a still more serious error, namely, where Clowes' translation, although indubitably correct, has been altered so as to produce an incorrect rendition. In each of the following instances Clowes' translation is literally exact:

CLOWES.

(She collected the meanings into one) according to an eminent mode of connection not unlike what is natural.

Thou art not *alone with us*.

(The rays of life) *are emulous* of the most simple fibres.

Ah, *my* friends.

The feathered offspring . . . nourished by the *parental vein*.

REVISION.

(She collected the meanings into one) *after the controlling method of association as in nature or after the natural law of association* (n. 91).

Thou art not *with us alone* (n. 56).

(The rays of life) *resemble* the most simple fibres (n. 90⁴).

Ah, *our* friends (n. 74³).

The feathered offspring . . . nourished *by the ways of their parents* (n. 26).

Turning now to the hitherto untranslated third Part, we note that the work is on the whole well done so far as we have examined. But for the sake of a future edition we wish to record the following errors, which have come to our notice:

TRANSLATION.

Some ultimate ends (*sic*) which reign *as it were alone* in each and all of the means (p. 256 note).

On account of which, *from what was seen before* I was made the partner of thy life (p. 254).

SHOULD BE.

Some ultimate end which . . . rules in each and all of the means *as the one and only end*.

On account of which I have *providentially* become the partner of thy life.

The throngs of these human forms parted from each other (n. 112⁴).

All things were in vernal flower . . . and as it were enticed the pledges of union with the love which burned to hasten the union of the associate mind (n. 111).

(Our minds) may fall into error and their ideas be easily taken away. My mind likewise, while I know that those various infinite things adapt themselves harmoniously and most beautifully to the gyres of order, flies through them lightly and cursorily (p. 257).

The rendition of *medullæ redactæ* (n. 112 and *passim*) as "inmost certainties" is, to say the least, a somewhat loose interpretation. The translation should be "inmost powers set forth in act (or enacted)."

In the marginal indicative notes of Part I, which were translated from the photolithograph, we also note a number of mistranslations, some being due to a misreading of the manuscript:

TRANSLATION.

The goodnesses of . . . the world *should introduce* to the goodnesses of heaven (p. 113).

The soul *with her rational mind* communicates pleasantnesses, etc. (p. 94).

Nature was created *for what is spiritual* (p. 140).

The origin of birds *which were also born from eggs and vegetables* (p. 42).

Some are led to a whirlpool lying between them and the goal *but in sight of the latter* (p. 203).

The throng mutually divided. (The context shows, not that the throng of human forms divided, but the throng of human and animal forms).

All things were in vernal flower . . . and, as proofs of union, gently fomented his love, which burned to hasten the union with himself of a consociate mind.

(Our minds) easily carry their ideas off into errors. So likewise my mind, when, lightly and with narrow range, it flies through those infinitely various things which fit themselves into the gyres of orders,—and this, I know, in the most harmonious and appropriate manner.

SHOULD BE.

The goodnesses of the world are *to be introduced* to the goodnesses of heaven.

The soul communicates *to the rational mind* pleasantnesses, etc.

Nature was created *spiritual*.

The origin of birds *is also from eggs born from vegetables*.

Some are led to a whirlpool lying between them and the goal, *but which in their sight is the goal*.

The sight should not *regard* [mere] *effects* (p. 98).

The active forces of the sensations *as well as those of the external* [channels], inflow extrinsically (p. 135).

Various cupidities (p. 199).

Cave-like dwelling (p. 192).

How intelligences are born when ideas are changed (p. 136).

He regards *uses not effects*. (Here *visus* has evidently been read for *usus*).

The active forces of sensations, *even of the inmost sensations*, flow in extrinsically (*et internorum* seems to have been read for *etiam intimarum*).

Cupidities of the *animus* (*varie* read for *animi*).

Couch (*cubile*).

How ideas, truths, intelligences are born (*vertuntur* read for *veritates*).

There remains to be noticed only the index; but the less said about this the better. It is comprised in 3½ pp. and gives only the most meagre hint of the matters contained in the book.

The results of our examination of this new edition of the WORSHIP AND LOVE OF GOD have been to us, as they will doubtless be also to our readers, an exceeding great surprise. Mr. Stroh, who, we understand, has done the work of revision and translation, is not only a competent Latin scholar, but he excels as such,—a fact that is manifest from his able work as Editor of the Latin works of Swedenborg, to say nothing of the many proofs that have come to our personal notice. But that the translation before us nevertheless contains serious errors,—and errors even where Clowes is correct,—is beyond dispute. We would be far from giving the impression that the translation is as a whole bad or incorrect. We have pointed out its errors, and these therefore necessarily loom large before the mind; but in justice we must add that the work as a whole is in general a correct translation, though frequently clothed in a diction inferior to that of Clowes.

The main work of revision and translation was completed, we understand, some fourteen or more years ago, and to this circumstance, perhaps, together with the manifold and responsible duties pressing on the translator, and his long illness which obliged him to relinquish the final oversight of

the work, are due its defects. But whatever the cause we imagine that Mr. Stroh, with that scholarly and impersonal regard for correctness, and even exactitude, for which he is so well known, will welcome the pointing out of these defects as a means for the improvement of the next edition of Swedenborg's crowning philosophical work.

PHYSIOLOGICAL PAPERS

BY LILLIAN G. BEEKMAN

THE CHART OF THE FOUR-FOLD MAN

Showing in Parallel Tables Swedenborg's
Teachings Respecting

THE DEGREES OF MAN

As Given in His Philosophical and
Theological Writings

TOGETHER WITH

NOTES AND COMMENT

ECONOMY OF THE ANIMAL KINGDOM (Part 2.)

I.

There are higher and lower substances; as are the substances so are their qualities, powers, offices (613, 618, 223, 242, 297, 302).

(See Notes under A.)

A

The soul,—the simplest and first substance of man; the human spirituous fluid (311, 221, 275, 276, 204, 205, 292, 350).

The human formative substance (*Ibid*).

Is actuated by primal and universal aura* (290); lives the life of God, the Spirit of God alone being purer and prior (226, 231).

All ideas are common to it even from conception and the seed (277, 294).

*The third successive below the primordial points of creation; see *Principia*.

B

Intellectual mind,—first determination of the soul (304).

Second or mediate faculty and degree (273, 278, 239); a centre between the soul above and the animus below (287, 323).

Its office is to understand, think, will (278, 269, 332).

No ideas connate to it; rudimentary at birth (277, 300).

C

The common sensory or animus (279, 307).

Its office is to conceive, imagine, crave (279). The images or objects of imagination are the same as the objects of memory, and are in the same degree, namely, next above hearing (309).

D

Hearing, and, in full, the peripheral or external sense-organs; together with

The motor organs, the body (280-282).

There are four successive faculties in the human creature man (635, 269, 272, 273, 282, 346).

(See Notes under A.)

The human soul or

A { Human formative by which man is formed in the womb and perpetually sustained and reformed after birth (221, 293, 313).

Its intuitive representations in itself are of the order of the universe and the ends of creation. In its substance and form is connate the science of all knowledges of the universe (276, 290, 294, 298); and all ideas (294, 227, 211).

The mind,—a mediate substance and faculty (191, 287, 322).

B { Its concepts are immaterial ideas; to be called rational so far as they permit themselves to be illumined by the soul (289).

Rudimentary at birth; must be informed by truths insinuated through senses before it can receive light of the soul (296).

Affected to sense-modifications by the undulatory activities of the second aura or atmosphere of creation (289).

Is in same plane as soul of higher animals (338, 341).

The animus or common sensory.

C { Its office is imagination, memory, cupidity (279, 309). Affected to sensations by undulatory activities of the third aura or atmosphere (the ether) (289). The eye or animus (289).

Plane of the actual mental life of animals (346),—who possess imagination (279); and of formative substance or soul of the vegetative form (355), and of insects (*Corpusc. Phil.*).

D { Hearing, and, in full, the sense-organs of the body together with

The body itself (280, 301, 308, 309).

A includes: (1), the supreme essence or primal formative substance, the soul *per se*; and (2), a celestial form consort thereto and consubstantiate therewith, but of substance more compressed, and formed into a hollow primal fibre (*cf.* 2 E. A. K. 296); called Pure Intellectory; supreme, or simplest, cortex (166, 125).

- A {
 A¹ {
 An essence actually fluent and present in every part of the body as well as of the brain (174).
 Is the life (159) which forms man before and after birth. Its laws and truths are those of the spirit of God, or are spiritual truths (127).
 A² {
 Pure intellectory or simple cortex (131, 134). Celestial form itself (125). Possesses connately all universal truths and all the truths and sciences of creation and nature (131, 134). Is unable to bring forth its truths in B until B has grown and been formed to truths harmonious and correspondent with celestial and inmost natural truths (155).

Rational mind. A mediate mind or faculty (123, 308, 311.

Is the proprial human (310, 313, 152).

Its office is to think (123). Ground of interior or higher memory and imagination, all whose images are acquired by analysis and comparison, unification and abstraction; or are abstract and immaterial (142, 144). Here are intellectual ideas (357), understanding, free will (148, 141, 355), and rational affections (200).

Only its rudiment connate; capable of being instructed (134).

Cannot receive light and influx from A, nor can the consorts A¹ and A² produce in it their offspring truths, until it has been formed by truths harmonious with those of A² (154, 156, 157).

Natural mind (313 viii); called also common sensory and animus (197).

Ground of exterior memory and imagination (163, 106, 142, 144).

Here are animal affections (200) or cupidities (309).

Exterior sense-organs (15, 16, 17, 21).

The body.

4.

5.

6.

	<p><i>There are higher and lower substances.</i> (See Notes under A.)</p>	<p><i>There are four faculties.</i></p>	<p><i>There are distinct faculties of life one within another.</i></p>
A	<p>The most simple substance of man is his soul, which also is the first and supreme.</p> <p><i>From this again is born</i></p>	<p>The soul,—the first and inmost substance, wherefrom man is formed in the womb and also after birth; and derives all that is afterwards human with him.</p>	<p>An inmost.</p>
B	<p>The second substance which is that wherein are carried on changes which are thoughts.</p> <p><i>From this again is born</i></p>	<p>The rational mind.</p> <p>Its office is to understand and will; its operations are called thoughts, and its ideas are immaterial. Does not appear in the infant, but grows and is perfected after birth.</p>	<p>A more interior.</p>
C	<p>The third substance, wherein exist changes of state called imagination; here is the memory itself.</p> <p><i>To this then succeed</i></p>	<p>The lower mind.</p> <p>To it belongs imagination, material ideas corporeal affections.</p>	<p>An interior; after death becomes new containant of interior faculties.</p>
D	<p>Sensations, existing in sensory organs. The motor organs (body in general) (925).</p>	<p>The sensations or exterior sense-organs (together with the body) (643).</p>	<p>An outmost or body, — lost at death (2835).</p>

ARCANA CELESTIA.

7.

Every man has an internal man,—above his rational, and the habitation, of the Lord (2093). Like the internal man of the Lord (1894, 2093). Perfect and ever preserved from injury and perversion (D. 2474, 2487). Is the Tree of Life inmost created in every man (2187), by virtue whereof he is man (1999).

Consists of two consorts, Abram and Sarai:

- A { A¹ { Abram, supreme essence; originating esse of man; esse of Lord (1894). Called Divine celestial good (2554), soul, human internal; receives influx of Lord immediately (H. 39).
Before birth formative; after birth reformative and sustaining; here Lord alone acts without the heavens (D. 4016).
From it man is man and immortal (1999).
A² { Sarai consort to A¹; the spiritual itself; truth intellectual conjoined to Divine celestial good; celestial form itself; form of celestial truth. Connate at birth. Not an essence but a structure non-fluent (2507, 1901, 1904). Unable to bear to Abram on plane of rational until that plane is formed by truths harmonious with her own (1900, 1901).

The rational or middle faculty (1940, 5081). Ascent to it is from faculties below, descent from internal above (2851, 2701).

Remains stored here (1906).

The thinking plane, proprium (1940), human principle (2636), human understanding (D. 899).

Ground or substance of thought, understanding, will (1702), intellectual and immaterial ideas (3223), interior memory (2487).

B {

Rudimentary at birth (1893).

Answers to second heaven (2187).

In this degree is the inmost soul of brutes (D. 2770).

C {

Natural mind (3020); external of the spirit (E. 726). Grows out from B as a sort of excrescence (3301).

Ground and substance of exterior memory, imagination (2487), of twin organic formation, Jacob and Esau (3293, 3299).

D {

The hearing or corporeal sensual sense-organ, and all the peripheral sense-organs; *together with* the body, or flesh, bones, and red blood, composed of helpmeet substances of lower type of form, pure circular and varied angular.

ARCANA CELESTIA.

	8.	9.	10.
A	<i>In every man there is:</i>	<i>From the union of Divine good and Divine truth there is conceived with man:</i>	<i>In every man there is:</i>
	An internal.	An intellectual (or organic prime).	A celestial. and spiritual which answers to highest heaven.
B	A rational or middle	A rational (or organic prime).	A rational
			which answers to second heaven.
C	A natural* (2181).	A scientific (or organic prime) (2508, 1443).	An interior sensual which answers to ultimate or lowest heaven (978).
	* (That this is the natural mind not the body, see 1999; cf. A. E. 726.)		
D	In all these columns D is implied as subjected to A, B, and C.		

ARCANA CELESTIA.

APOCALYPSE EXPLAINED.

II.

I2.

A

Man has

A spiritual mind by which
he is in heaven;

B

The rational mind, to which
belong:

Thought, spiritual affection,
interior memory.

A rational mind mediate be-
tween heaven and the world.

C

Natural mind; interior sen-
sual.

Ground of exterior or cor-
poreal memory and imagina-
tion.

Man has this plane in com-
mon with brutes (3020).

A natural mind by which he
is in the world.

D

D is implied as subjected to
A, B, and C.

A sensual mind by which
heaven with him communi-
cates with the body (1056).

THE CHART OF THE FOUR-FOLD MAN.

I. NOTES.

A.

Both the *ECONOMY* and the *ADVERSARIA* indicate plane A as including:

A¹ An essence which is universal; lives the life of God; is supra-celestial. And

A². A celestial form not so universal.

Above the cortical substance, or bodiment of the thinking mind, there exists a prior form woven of purest fibrils. (2 *E. A. K.* 204, 311).

In treating of what is drawn from the body at death, the *ADVERSARIA* says that in the intellectual mind is included "the prime and purer substance of man, the essence whereof is supra-celestial and is properly called the soul" (2 *Ad.* 1374; see the full quotation below).

A¹ is able to be present everywhere actually in the lower degrees even to the lowest, there to act as formative substance or father, omnipresent and omniscient, adjoining to itself from the blood ultimate materia with which to form offspring structures. This is expressed Biblically by Abram "going in unto a handmaid" (*A. C.* 1902, 2554, 2557).

A² Sarai, legitimate consort of Abram, intellectual truth from a celestial origin, is as yet barren, unable to bring forth offspring with Abram, as upon the plane of the middle or rational faculty; unable to produce her truths and series of truths upon the ground or degree of that lower organic faculty; until the faculty itself be formed by a co-acting of the sensual and corporeal to truths which are harmonious and correspondent to her own (*A. C.* 1900, 1901; see cols. 3 and 7); yet only by such conjunct action and derivation of Abram and Sarai upon the

mediate plane, can that plane become the Isaac, legitimate organic in which the promise is covenanted.

The correspondent of A^2 during the first or golden age is C (*Soul* 313, iii). This is the age of remains without knowledges (*ib.* viii).

B. AND C. THE MEMORIES.

With the explicit statement that the rational is the ground and substance and degree of the interior or higher memory; and that the natural mind or inner common sensory is the ground and substance of the exterior memory, compare the teaching that "the exterior memory regarded in itself is a certain organic (structural growth), formed from the objects of the senses, especially sight and hearing, in the substances (glands or cells) which are the heads of the nerve fibres; and according to the impressions from these objects there are effected (in these glands) variations of form" which are reproducible (*A. C.* 2487); also the teaching that the interior memory is in the rational as a structure formed and organized in like manner; but from the objects of inner vision,—abstract or immaterial, general ideas,—in regular series and order (*D. P.* 279).

That this natural mind or common sensorium "is distinct from the rational mind, and in a degree (strict-meaning, discreet, degree) below it;" and that herein is the exterior or corporeal memory, the imaginative principle, and all the natural or animal affections,—the rational mind, the degree above, being the thinking principle, ground of the interior memory,—see *A. C.* 3020.

This degree is formed during life on earth (*H. H.* 345); in it interior things are inrooted, and it is taken at death and eternally conditions and finites the reception of celestial and spiritual things and the appropriation of the influx of life (A^1) from the Lord (*S. D. min.* 4645, 4646).

Two organic births or post-natal organic formations are possible here,—called Ishmael and Isaac. Ishmael is born first of A¹ as father with derivatives of D and C as mother (1895, 1900). The Isaac birth is later,—of A¹ as father and A² as mother; this is the legitimate son born of the conjugal of the full internal man (*A. C.* 2508, 2093). See cols. 2 and 3.

- C. The inmost of C is the outmost of D, given in rudiment, together with A in full, in the paternal seed. This plane C is that which begins to grow first after birth, coincidently with the introduction to the experiences of the outer senses. Since all the material of its early growth must be drawn from the body and blood with which the mother prenatally endows the new born creature, that early growth will be qualified and stamped by the type of character, faculty and isomerism, regnant in the mother (*R. P.* 424). The mother's stamp here would be increased and prolonged evidently, with mothers who suckle their own children.

With Newchurchmen,—all those in faith in the Divine Human,—the organics of this plane are all disposed by the Lord in that Human, immediately, that is, not through angels and spirits (*S. D.* 4041, 4043).

That in the Golden Age C is correspondent to A. See above, under A.

D.

Flesh, bones and red blood are formed of the grosser, more composite particles of the soils and return-atmospheres (*BRAIN* 83); for the body,—aside from the human internal or soul and the celestial ultimate form, which is in it, first

and last and ever, as the God of the Earth,—is actually compounded of the simple circular and the various angular composites which act as helpmeet or infilling particles (2 *E. A. K.* 283, *Soul* 7, 9),—for such are the forms of the particles involved in the construction of the great corporeal form (*A. K.* 97) ; and such the characteristic forms of those degrees of the spiritual which exist beneath the heavens, in the waters and lands of earth (*A. E.* 1210). Confer the statement that “the inmost soul of brutes is in the sphere of our minds” (*S. D.* 2770).

The corporeal and the outmost sensual which is part thereof, are exempted from the particular influx or influence of spirits and angels, and are ruled from general influx,—that of the Lord’s life (*A. C.* 5990).

THE PLANES THAT SURVIVE AFTER DEATH.

Of the four faculties of man, there are left or lost by death the infilling particles and water of the red blood. The spirit, such as it has grown in extent and been individually formed by life in the world, continues to live as a sensitive, competent human form (2 *E. A. K.* 351) with all the attributes allied to such a form that it has determined and distinguished for itself in the world (*ibid.* 352, 353, 358).

This leaves A, B, and C as degrees of the spirit retained by the man after the change of death,—death itself being only the separation from D or the corporeal, that is, from the grossest angular and circular forms of the body and exterior senses.

When man dies all that which is corporeal, that is, earthly, is dissipated in process of time. But as the body is dissipated, the man himself, that is, that in man which is called his natural mind, and which is a real substance the form whereof is called mind, is again gathered up; hence also his superior mind, which is called intellectual, together with the soul. First of all, that substance, the essence whereof is mediate between natural substance and spiritual, is loosed from its

connections with earthly things,—properly called the body. It carries with it, because it includes, that superior substance the essence whereof is spiritual and is called the intellectual mind which is properly human or the man. This at the same time includes in itself the prime and purer substance of man the essence whereof is supra-celestial and is properly called the soul and from which man derives the fact of his being truly a man and not an animal and of his rising a man after death (2 *Ad.* 1374).

A further distinction is made in HEAVEN AND HELL: A and B are the planes taken by human creatures who die as infants,—C not yet being grown. A, B and also C are taken by human creatures who live to adult life before dying,—C being the plane of the spirit or mind specifically acquired for himself by the human being during actual life on the earth.

ON THE DIFFERENCE BETWEEN THOSE WHO DIE INFANTS AND THOSE WHO DIE ADULTS. Those who die adults have a plane acquired from the terrestrial and material world, and they take this with them. This plane is their memory and its natural corporeal affection. It remains fixed, and then quiesces; but still it serves their thought after death as an ultimate plane. . . . But those who die infants have not such a plane, but a natural-spiritual plane, because they derive nothing from the material world and terrestrial body (*H. H.* 345).

With all finite men on every earth, D,—that is, the “maternal” or helpmeet substances thereof,—is left at death to be broken up in the tomb from its gross, complex, ultimate form, and to be divided up into finer, less ultimate, forms and soils of the earth, preparatory to new uses as helpmeet particles for new created forms; for the soils of the earth and the particles of the inorganic kingdoms are less ultimate, that is, less compounded, than the bodies of men.

But with the Lord, the incarnate Word, the case was otherwise. After crucifixion and burial He arose on the third day with all the planes, a full Divine Natural Man; with plane D, the plane of exterior, sensual flesh, bones, and red blood, in completeness, power and perfection, infinite as to both their celestial faculties and their maternal,—their celestial fibres and the infilling circular and angular forms. So

that He now is Perfect Man possessing A, B, C, and D, infinitely full, perfect, obedient, actual, and without loss even of the helpmeet particles.

THE FOUR-FOLD MAN ACCORDING TO PLATO.

On the soul's four faculties of man :

1. The faculty of right reason apprehending the Logos.
2. Understanding; ground of opinion more or less approximating the first.
3. Persuasion or faith.
4. The knowledge of the "shadows" we call material entities (*Republic* vi, 511; see also 509, 510 on the "twice bisected line;" and vii on the "shadows of the den").

II. COMMENT AND CONCLUSIONS.

The Chart of the four-fold man presents the series of four successive faculties, or four degrees of substance and form, involved in the human creature; each member of the series being denoted by a given letter of the alphabet, A, B, C, D, and charted between horizontal lines of color.*

In twelve perpendicular columns, parallel lines of quotation are correlated; two columns from the *ECONOMY*, one from the *SOUL* or *RATIONAL PSYCHOLOGY*, one from the *ADVERSARIA*, five from the *ARCANA*, one from the *SPIRITUAL DIARY*, and one from the *APOCALYPSE EXPLAINED*. In this correlation of quotations, all the columns are seen to present the same series of four as characteristic of the human form. Moreover, in all the works paralleled in the columns, the power and office characterizing each successive member of the series is the same.

This rationally involves the conclusion that the twelve parallel columns are treating of the same organic verity, the same four faculties; and are treating of them from the same point of view; thus that the four human faculties, or four successive degrees of substance and form, of the *ADVERSARIA*,

*In the original chart the lines between A, B, C, D, are colored.

the ARCANA, the DIARY and the APOCALYPSE EXPLAINED are the same four as the four human faculties, or four successive degrees of substance and form constituting man, as given in the SOUL and the ECONOMY of the ANIMAL KINGDOM.

From the above conclusion, as from a new premise, a second series of correlations begins.

In the ECONOMY the four faculties constituting man (as given in columns 1 and 2) are stated to be parallel and answering to the four active atmospheres or auras of the universe (2 *E. A. K.* 274, 281, 289, 290) as those atmospheres are given in the PRINCIPIA (*ib.* 272, 312, 339). In the ADVERSARIA and ARCANA the four faculties of man, given in the same order and with the same predicates and offices (columns 4, 5, 7-11) have an added correlation in column 10 (*A. C.* 978), where they are stated to be parallel and answering to the heavens,—A, answering to the third or highest heaven; B, to the second heaven, and C, to the ultimate heaven. The correlation of B with the second heaven is also found in column 7.

Now, under the law that things which are equal to the same thing are also equal to each other, the conclusion involved in the new correlation is manifestly that the active atmospheres of the PRINCIPIA and the heavens of the ARCANA must correlate as answering to each other.

How is such tentative conclusion to be brought to control-study by means of further series of relation and comparison?

First let us arrange the matter in columns for ease of parallel grasp and reference:

2 E. A. K. 289, 290, Etc.

A. C. 978 ; A. E. 1210

	1.	2.	3.	4.
A	{ Soul or highest faculty. }	= { First or supreme aura, the universal active atmosphere. }	{ Soul or highest of man. }	= { Highest or celestial heaven. }
B	{ Intellectual or rational mind. }	= { Second active atmosphere or aura. }	{ Intellectual or rational. }	= { Second heaven. }
C	{ Common or interior sensory; exterior memory, imagination. }	= { Third active atmosphere or aura called the ether. }	{ Natural mind or interior sensual; exterior memory, etc. }	= { Ultimate heaven. }
D	{ Hearing and peripheral sense-organs }	= { Aerial elementary or 4th aura. }	A. C. 978 gives only A, B, C; but A. E. 1210, gives spiritual degrees lower than the heavens, and terminating in compressed entities which are the primitives from which, by gross aggregation into new types of form, are the waters, rocks, soils, etc., of our earth. These may, for the present, stand as tentatively filling D in the series.	
	{ Body. }	= { The waters and rocks of the earth, the substance of which was originally derived from a portion of the volume of aerial elementary formed about the planet, compressed by condensation, or cooling pressure, into a crust about the solid planetary core, in the great primordial epoch of the nascent earth; and, in addition, the soils produced by remodifications and combinations of the above inorganic materia, through the intervention of organic life accomplished in organic bodies and by the exterior activity thereof. }		

Now on the ground that columns 1 and 3 are equal to each other, it follows that since 1 equals 2, and since 3 equals 4, therefore 2 and 4 are equal to each other.

In what way can we reduce this 2 and 4 to a common denominator in order to bring the members of the above conclusion to a common basis of comparison, and thus bring the conclusion itself into apprehensible form for control-test?

There is another set of correlations with the heavens, by which we may be able to reduce these two columns to a common term.

In the APOCALYPSE EXPLAINED, 288, it is said that "by the heavens is meant the Divine which proceeds from the Lord, because the heavens are from His Divine;" and in the ATHANASIAN CREED, 62, that "it is the Proceeding Divine from which heaven is; thus the Divine forming heaven" (see also n. 154). Again, in the work last quoted, n. 191, the Proceeding Divine is stated to be what is first extended in the created universe; "it is afterwards formed into successive spheres, the last of which is the atmosphere of the natural world" (*cf. A. C. 7270, Canons, God, vii, 5*); and in n. 178, the Proceeding Divine is said to be in its ultimates in nature. Thus, from the Divine Proceeding were created not only the heavens but also the worlds (*A. E. 726, ii*).

Here, in the Proceeding Divine we have a series of successive spheres or atmospheres which correlate with the heavens; or, rather, the heavens correlate with the series of the Divine Proceeding; for the latter is the Prime, while the former are made by it. Moreover, the Divine of Use in the Lord, the omnipresent and creating God, presents itself as an elementary atmospheric series.

This possible reduction of the series of the successive heavens to terms of the Proceeding Divine and the series of active atmospheres into which it is successively formed, opens way for a deeper and fuller and more inclusive comparison,—a comparison between the series of active atmospheres given in the PRINCIPIA, its use, office, quality and power,—with the parallel series of all that we know, correlate thereto, of the Proceeding Divine, in its rise, progress, ultimation; a comparison also of the cosmic and microscopic uses of each degree in the universal heaven, and in man, and in the macrocosm, even to ultimates.

Nor will the result of such comparative correlation be without possibility of further touchstone. For heaven is represented by the tabernacle; as are the apartments of the tabernacle in their series and order, so are the heavens in their series and order (*A. C. 9632, 9741; cf. H. H. 31*).

Furthermore, in ARCANAE CELESTIA 9632 the statement is made that not only are the heavens represented by the taber-

nacle, but that similar things occur in the tabernacle as with man; and that hence the understanding may borrow light, not alone concerning the tabernacle but also concerning the forms of heaven. But this light concerning the forms of heaven will be extinguished with all those who do not have a distinct knowledge concerning the things which are in the human form; concerning the spiritual things of faith; and concerning the celestial things of love. In the same number is also given the correlation of the four coverings of the tabernacle with the four degrees of membranous faculties with man, as a little tabernacle.

Here are new series giving ground for further control-test of the conclusion; and for possible convincing verification by series and columns of witnesses; and a possible unification of all the subjects involved, into a sort of living unity, vivid, luminous and enkindled, delightful and warming to the mind.

THE NEW PHILOSOPHY.

XIX

OCTOBER, 1916

No. 4

Editorial Notes

In the present issue we publish the first installment of a new translation of Swedenborg's *HIEROGLYPHIC KEY*. This work is very little known to students of Swedenborg's philosophy and is but rarely quoted or referred to in discussions of that philosophy. And yet, as the discerning reader will see, and as we hope to point out in a future article, the work is of immense importance to the understanding of its author's other writings. It is, in fact, that "doctrine of correspondences" to which he so often refers as one of the "new doctrines" which must be seen and understood before there can be any real entry into the mysteries of nature. Swedenborg states, in various of his writings, that it is his intention to publish this doctrine before the world. But the promise was never literally fulfilled.

The work itself, however, had been written,—though possibly not in complete form for publication,—and after the author's death it was found among his MSS. with the title as given in the present translation. It was published by Mr. Hindmarsh, in Latin, in 1784, and in English translation in 1792. This translation was reprinted in New York, 1813, and again in London, 1826. A new translation by Dr. Wilkinson was published in 1847, during that memorable period which witnessed the activities of the SWEDENBORG ASSOCIATION, to whose labors we owe so many of the English translations of Swedenborg's philosophical writings.*

*In addition to the above there has also been published a Swedish translation by Carl Delen, anonymously and slightly revised, in

Stockholm, 1795. This was reprinted in 1855. There has been no other edition or translation of *HIEROGLYPHIC KEY*.

In point of accuracy, Dr. Wilkinson's translation is far inferior to Hindmarsh's. The work of the latter was a most literal translation; indeed, its distinguishing characteristic seems to be fear of misrepresenting the author's doctrine, so absolutely new to the world. In consequence the translator has worked with the most literal accuracy, and has not hesitated, in several cases, to depart from English idiom and accepted English words.

On the other hand, Dr. Wilkinson seems to have been inspired by the desire to produce the work in a more elegant English dress; but in doing this he has frequently adopted the most flagrant paraphrases, which represent the author's meaning only in a most general way.

In addition to the above translations, we have also made use of a manuscript translation made by the present translator when he was a boy of sixteen years, and during the dinner hour when he was employed in an English solicitor's office. It was a labor of love,—a labor also which was a part of his endeavor to acquire a knowledge of the Latin language; and the taking up of the work again after a lapse of more than thirty years has revived many old memories. This, perhaps, the reader will accept as our excuse for mentioning what, to him, will appear a trivial circumstance.

In the present work we have made profitable use of the three translations just mentioned, and from all of them have received useful suggestions. But, in addition, we have had the advantage of translating from proof sheets of the phototyped manuscript, executed under the able direction of Mr. ALFRED H. STROH. Comparison with this photograph shows a number of errors in the published Latin edition, most of which have been preserved in the English translations.

In the present translation, our aim has been to be literal and yet as far as possible to present the author's doctrine in good English dress. Whether we have succeeded, must be left to the judgment of others.

Our readers will doubtless be surprised at the late date at which the present number of *NEW PHILOSOPHY* reaches them, and some explanation of the delay may not be unacceptable.

When the plan of the present number was first made, it was designed to include the first installment of *SELECTÆ SENTENTÆ*,—one of the most youthful of Swedenborg's writings, and one which has never yet appeared in any translation.

Considerable progress was made in the rendition of this little work; but it became more and more apparent that the translation could not be published without considerably more study and the consultation of books, very many of which are not now available, while of others we have no hint except the vague abbreviations used by Swedenborg. We were therefore compelled to abandon the work, or, rather, to defer its continuance to a time when more leisure and opportunity shall be available for its successful completion. But from what has already been accomplished we are convinced that both the student of Swedenborg, and also the average literary reader, will be greatly interested and profited by a perusal of the *SELECT SENTENCES*.

We commend to the earnest attention of our readers the article by the Rev. W. H. ACTON, entitled "A Curious Belief," which appears in our present issue. Mr. Acton's acceptance of Swedenborg's philosophical doctrines is beyond question. But he makes a distinction between those doctrines, based, as they are, on a vast multitude of observations viewed with the acumen of a uniquely perceptive mind,—between these and some few of the confirmations adduced by Swedenborg in support of them. As MR. ACTON points out, the foundations of the philosophical doctrines are so solidly based that they will remain, whatever new facts may be discovered by modern research. Some of the alleged facts which Swedenborg, relying on the observations of his contemporaries, has adduced in support of his doctrines, may indeed be disproved, but this will not affect the truth of the doctrines themselves. Nay, as MR. ACTON well observes, "Swedenborg does not base any conclusion on the circumstances related [the alleged facts], but simply uses them as illustrations. If this illustration is untrue it does not vitiate the truth of the principle, and this after all is the thing that matters."

Many unsuccessful attempts have been made to point out "mistakes by Swedenborg," but for the most part these have been attempts to overthrow the basic principles that underlie his philosophy,—and as such they have invariably been disproved by later studies. But to show, as MR. ACTON has done, the weakness of certain illustrations used by Swedenborg on the authority of his contemporaries, but which have since been entirely disproved; and to indicate at the same time, that the doctrine thus faultily illustrated is by no means thereby vitiated,—this can have no other effect than to dispel the sphere of dogmatism, and make more free and clear the rational acceptance of Swedenborg's Philosophy.

BOOKS RECEIVED.

THE KINGDOM OF HEAVEN AS SEEN BY SWEDENBORG, by John Howard Spalding. London, Dent & Sons, 1916. pp. 348. This is a remarkably well written and readable work, which, while apparently designed for those not acquainted with Swedenborg's theological writings, will, we imagine, prove of the greatest interest to those who are already students of Swedenborg. Among the problems of surpassing interest that are discussed by the author in a most entertaining and undogmatic fashion are, the nature of the spiritual world, the problem of evil, the degrees of the human mind, the Incarnation and the Second Coming.

A CURIOUS BELIEF.

BY THE REV. WILLIAM H. ACTON.

In Swedenborg's INDEX BIBLICUS under the word, *Hirundo*—swallow, we find the following curious statement: "The swallow [is put] for the rational, since it regards ends, the life after death, and the day of judgment; because the swallow is buried in the waters, and rises again in the Springtime, Jer. viii, 7."

This is not the only case where Swedenborg refers to what seems to have been accepted as a fact of Natural History by many people of his day, that swallows passed the winter in an unconscious state beneath the frozen waters of the rivers and marshes of northern Europe.

In the posthumous work on the Fibre, n. 537, we read: "Certain species of animals, such as swallows, bears and other species, pass the winter in a kind of death without food or respiration." In another MS. on the diseases of the brain, (which so closely resembles that portion of the work on the Fibre from which we have just quoted as to suggest that one may have been the first draft of the other), we find the following statement, made in like connection with the subject of Ecstasy: "Certain kinds of animals and insects are supposed to pass an ecstatic life during the winter; and live *immersed in water, as swallows*; or in hidden places as bears; or in their crevices, as worms and insects, without food or respiration, and are resuscitated the next spring into their former life." (Photolith. MSS., Vol. v, p. 600.) There is also an allusion to the same thing in A. K. iii, n. 509, note y.

In this, as in most cases, Swedenborg relied upon the accuracy of the facts observed by others; nor was he gifted with any internal illustration that would enable him to distinguish between true and false "facts." There are, no doubt several cases where he endeavored to confirm and illustrate his conclusions by referring to observations of facts, which, on more careful investigations, have been shown to be unreliable, or inaccurate; but I am not aware of a single case in which the

conclusion itself has been vitiated, or disproved by reason of the erroneous observation upon which Swedenborg had relied for confirmation; indeed in some cases it will be found that the inaccurate observation, which *seemed* to confirm Swedenborg's deduction does not really do so, as he imagined, whereas the fact when rightly examined does.

In regard to the supposed hibernating habits of swallows, to which Swedenborg alludes in the quotations given above, it may be of interest to the student of his philosophical works, to call attention to the following extracts as indicating the sources from which Swedenborg derived his knowledge of the "facts" to which he refers.

In the PHILOSOPHICAL TRANSACTIONS of the Royal Society for 1666, no. 19, p. 350, there is a paper by M. Joh. Schefferus, a professor in the Swedish University at Upsala, on Swallows found in the lakes in winter. I quote from the Abridgement, vol. ii, p. 835, (which it is very probable, was used by Swedenborg himself):

"It is most certain that *Swallows* sink themselves towards Autumn into Lakes, no otherwise than *Frogs*; and many have assured me of it, who have seen them drawn up with a Net, together with Fishes, and put to the Fire, and thereby revived."

In another paper, (ib. p. 34, abr. ii, p. 835), by J. Hevelius, the celebrated astronomer, and burgomaster of Danzig, we read: "I have frequently heard Fishermen affirm, that they have here, about *Dantzick*, often fished them out of the Lakes in the Winter, but I have never seen them myself."

In Trevoux's DICTIONNAIRE UNIVERSAL (published in 1721) s. v. *Hirondells*, we find the following statement: "Father Kirker [? Kircher], says that the Polish fishermen often take in their nets, great bunches of swallows, holding each other by the beak and feet; and that they revive on being put into a warm place. He also refers to what may be found in Scaliger, that swallows which have been frozen all winter, and as if dead, revive in the spring-time, and are like others."

In all these instances the writers do not speak from their own observations but from hearsay.

According to the LONDON ENCYCLOPEDIA, art. *Swallows*, the

opinion stated above was also held by Linné and other well-known men. The following extract is cited from Kalm, who also held the same belief: "Dr. Wallerius, the celebrated Swedish chemist, informs us that he has seen more than once, swallows assembling on a reed till they were all immersed and went to the bottom; this being preceded by a dirge of a quarter of an hour's length [1]. He had seen a swallow caught during the winter out of a lake with a net, drawn as is common in northern countries, under the ice; this bird was brought into a warm room, revived, fluttered about, and soon after died. Dr. Klein applied to many farmers-general of the King of Prussia's domains who had great lakes in their districts. . . . All the people that were questioned made affidavits on oath before the magistrates. 'The mother of the countess of Lehndorf said that she had seen a bundle of swallows brought from the Frishe-Hoff . . . which, when brought into a moderately warmed room, revived and fluttered about. 2. Count Schleben gave an instrument on stamped paper, importing that by fishing on the lake belonging to his estate . . . in winter, he saw several swallows caught in a net, one of which he took up in his hand, brought into a warm room, where it lay about an hour, when it began to stir, and in half an hour after it flew about in the room.' Mr. Kalm mentions similar affidavits made by four farmers; and at last adds, '7thly, I can reckon myself among the eye-witnesses of this paradox of natural history. In 1735, being a boy I saw several swallows brought in winter by the fishermen from the Vistula to my father's house; where two of them were brought into a warm room, revived, and flew about. . . . In Jan., 1764, [the river] being covered with ice, I ordered the fishermen to fish therein, and in my presence several swallows were taken, which the fishermen threw in again, but one I took up myself, brought home, . . . and it revived, but died about an hour afterwards.'"

Kalm, whilst admitting that swallows migrate from such countries as Spain, Italy and England, contends that in the cold northern countries they immerse in the sea, lakes and rivers. He is quoted at some length by Buffon, who also cites

testimony to the effect that Swallows have been found clinging together in clusters in a torpid state in mines, and in the holes of chalk cliffs. Pennant, the naturalist, states that Aristotle and Pliny believed that swallows do not remove far from their summer habitations, but winter in the hollows of rocks.

From what has been said above there seems to have been reasonable ground for the notion described above; and in view of the authority of the eminent men who subscribed to it, it is not surprising that Swedenborg should have seen in the alleged suspended animation of swallows during winter, and their restoration to the activity of their life on the return of Spring, an image or the preservation of the Rational faculty and its resurrection after death. In this and in similar cases Swedenborg does not base any conclusion on the circumstances related, but simply uses them as illustrations. If the illustration is untrue it does not vitiate the truth of the principle, and this after all is the thing that matters.

A HIEROGLYPHIC KEY
TO
NATURAL AND SPIRITUAL ARCANA
BY WAY OF
REPRESENTATIONS AND CORRESPONDENCES.

BY EMANUEL SWEDENBORG.

FIRST EXAMPLE.

1. As long as motion endures so long does conatus endure; for conatus is the motive force of nature. But conatus alone is a dead force.

As long as action continues so long does will continue; for will is the human mind's conatus to action. From will alone no action follows.

The divine operation is as perpetual as His providence; for providence is the divine will to operate. But from providence alone no operation follows.

2. *The following mutually correspond to each other.* 1. MOTION, ACTION, OPERATION. Action is indeed attributed also to nature, and therefore might be substituted in place of motion; but action proper flows from a principle that can act from itself, or within which is will; consequently from the human mind. Again, action, but more frequently operation, is wont to be predicated of divine providence, although it is not a spiritual word. 2. CONATUS, WILL, PROVIDENCE. As regards conatus it is a merely natural word; but will is the property of rational minds; while providence belongs to God alone. That will and conatus mutually correspond to each other may be seen in the paragraph on Will; and that providence also corresponds, is apparent from the consideration that as will involves every human action, so providence involves every divine operation, that is, His universal will. 3. NATURE, HUMAN MIND,

DIVINE MIND, or GOD. In the first class are contained all those things that are purely natural; in the second those that are rational and intellectual, and consequently also moral,—or that pertain to the human mind; and in the third, things theological and divine. Therefore they mutually correspond to each other.

3. *Confirmation of the propositions.* 1. That motion endures just so long as conatus endures, is the common sentiment of philosophers; for they say that in motion there exists nothing real except conatus; and again, that motion is perpetual conatus. In place of motion may also be substituted action, which latter is sometimes in like manner purely natural,—action, namely, which proceeds from a force, and from which follows an effect. 2. That conatus is the motive force of nature. It is a philosophic axiom that force consists in a continual conatus to action, and that force is the principle* of actions and changes; also that motive force consists in a continual conatus to change of place. 3. That conatus without motion is a dead force, is also in accordance with the rule laid down by Wolff, to wit, that a dead force is one that consists in conatus alone, and that living force is conjoined with local motion [*Cosmologia*, n. 356, 357]. 4. In regard to WILL, what is meant is the human will, which proceeds from the rational mind, and whence comes rational action. There are also animal actions, which flow from a will emulous of the rational will. 5. That there is a non-operative providence is clear from the Scriptures; for there are human minds which repel all divine power. But because providence is not received it cannot therefore be said to cease; as neither can will, although action ceases.

4. *Rules.* 1. The first class I call the class of things natural; the second the class of things animal and rational,—which

*Principle or Beginning. The Latin word *principium* as used in the present work involves more than the English word *beginning*, for it refers not only to an actual beginning in time, but also to that

prior beginning which consists in potency and conatus, and which is the cause of the actual beginning. For this reason we have usually rendered the word as *principle*.

class also embraces morals; and the third, the class of things spiritual and theological. 2. The principal matter must be expressed not by identical terms, but by different terms proper to each class; such as, in the present case, Conatus, Will, Providence. 3. And, in fact, by terms which at first sight do not seem to signify or represent the same thing. For it is not at once comprehended that will corresponds to conatus, and providence to will; or that the rational mind corresponds to nature, and God to the rational mind. So likewise in other cases. 4. That purely natural terms must be explained and defined by natural terms that are more intelligible; but that terms belonging to the class of things rational must be defined by terms belonging to the class of things natural; and so terms belonging to the theological class by terms belonging to the class of things rational. As, for instance, conatus is defined by force of action; will, by the human mind's conatus to action; providence, by the divine will to operate; and so forth. 5. That in many respects it is allowable to use identical and similar terms in the several classes; otherwise the meaning would be rendered too obscure. As, for instance, the expressions, *as long as, endures, continues, alone, is, follows*, etc.; for these are not essential words; and although they also might be changed into others proper to their class, yet, for the sake of intelligibility, it is better to retain the customary words. 6. It is also allowable to express a single formula of one class by many formulas, and also by circumlocution; as, in the present case, *Conatus alone is a dead force*, may be expressed in the following class as *Will alone is a conatus that is followed by no action*; that is, *no action*, or *inaction*, is the same thing as *dead action*; but *dead action* sounds somewhat harsh. So also in the third or theological class.

EXAMPLE II.

5. In every nature there is, implanted in its conatus, a principle of effecting something; therefore, as is this principle, such is the faculty of effecting it; as the faculty, such is the co-

natus; and as the conatus, such is the motion, and consequently such the effect.

There is in every human mind, implanted in its will, an intuition and love of some end; therefore as is the love, such is the desire; as is the desire, such is the benevolence and will; and as the will, such is the action, and consequently such the accomplishment of the end.

There is in God, implanted in His providence, a most pure love towards us and for our salvation which is the end of creation; therefore as is this love, such is His grace and providence; and is the providence, such the operation, and such our salvation which is the end of all ends.

6. Order and the representative world are most perfect if the providence of God, the wills and ends of minds and the conatuses and effects of nature are consentient. But order and the world are imperfect if they are dissentient, and this in the degree that they are dissentient.

7. The expressions which mutually correspond to each other in this case are: 1. PRINCIPLE OF EFFECTING, INTUITION OF AN END, and, in God, THE LOVE OF THE END OF CREATION, THAT IS, OF OUR SALVATION. At first sight it seems as though something else than love, in God, would correspond to the principle of effecting in nature; but because God is the beginning and end of all things, there can be no beginning,* or that which is Himself, in God. But there can be a beginning of His providence, since providence is operative; and this beginning can be no other than His most pure love toward man and for man's salvation which is the end of creation. 2. EF-

**Principium*. See n. 3 note.

FECT, END, END OF ENDS OR THE SALVATION OF SOULS. Effect pertains to nature, but end to the human mind; for minds view ends before effects, and afterwards effects as instrumental causes which promote the end. It is but faintly human to conclude the end from the effect, that is, to gather wisdom from the mere presence of things, and beyond this to judge nothing concerning things yet to be. But in human minds it is only particular ends that are regarded, while the end of ends, or the most universal of all, belongs to God Himself. This end must be described in order that one may understand what it is, namely, the heavenly society of souls, that is, the salvation of the human race. 3. FACULTY, BENEVOLENCE, GRACE. It is well known that benevolence pertains to man, and grace to God. But what must we assume as the correspondent in nature? There can be no doubt but that it is a greater or lesser faculty, proclivity, or proneness of bringing into effect; that is to say, a greater or lesser facility,—from which indeed the word faculty is derived, a word which in other connections signifies power, possibility, etc.

8. *Confirmation of the propositions.* 1. That nature is the principle of effecting something. This may be evident from the philosophers who define nature. Wolff says that universal nature, or nature taken simply, is the principle of changes in the world [*Cosmol.* n. 503], and that it is an active or motive force, or the aggregate of motive forces [*ib.* n. 506, 507], that is, of conatuses; for conatus consists in forces; so that this principle must of necessity be implanted in conatus. Aristotle also says that God and nature do nothing in vain [DE CÆLO, l. i, c. iv.], but all things for an end [*Naturalis Auscultatio* l. ii, c. viii; *De Part. Animalium*, l. i, c. v.]. Thus the principle of effecting, and the effect itself, belong to nature; the end belongs to God; and end and effect together belong to the human mind or man. 2. That love of an end is implanted in the will of the human mind is evident enough; for the will is rarely determined into act unless there be some incitement of the love, or the desire of some end; consult the passage on the will. 3. That in God salvation is the end, and that nature spontaneously concurs to the promotion of ends through ef-

fects, is plain enough from the fact that God is above nature, and has nothing in common therewith. For nature was formed and created for the promotion of the ends of divine providence; which is the cause of correspondences and representations. Nor can the end of creation be anything else than a universal society of souls, by which God may be regarded as the end of all.

9. *Rules.* 1. There are two modes of proof whereby we may know whether we have reached the truth. Whether or not it is a physical truth in the first class is apparent from the second and third, or the moral and theological classes; and whether or not it is a moral truth is apparent from the physical and theological classes. All things should conspire together and be in concord, that is, should confirm the real truth; for when there is a correspondence, if something be met with that is not true, it is a sign of error. 2. There is, in addition, another proof, to wit, when the contents of the three classes are so concordant that when placed side by side they produce a fourth truth. As in the present case: *In order that the representative world may be perfect, the providence of God, the wills and ends of minds, and the conatuses and effects of nature must be consentient* [n. 6]. Thus the one is an exemplar, the other a type, and the third a likeness. All things Divine are exemplars, things intellectual, moral and civil are types and images, while things natural and physical are likenesses. Thus exemplars, types and likenesses must by all means represent each other. There is also a mutual correspondence and harmony; for one is recognized by the other, and one recognizes the other as the respective of itself.

EXAMPLE III.

10. There is no motion without conatus, but there is conatus without motion. For if all conatus were to break out into open motion the world would perish, since there would be no equilibrium.

There is no action without will, but there is

will without action. If all will were to break out into open action man would perish, since there would be no rational balance or moderating reason.

There is no divine operation without providence, but there is indeed a providence not operative or effective. If all providence were operative and effective human society would not be able to subsist such as it now is, since there would be no true exercise of human liberty.

11. *Correspondences.* 1. THE WORLD, MAN, HUMAN SOCIETY,—man being called a microcosm or little world; and human society the great world, or, in French, *le monde*. For the existence of a world, nature is required; for the existence of man, a rational mind is required; for the existence of human society, it is necessary that there be God. Whatever is divine, that same is presented to view in human society; and especially will it be presented to view in the most universal society, or the heavenly society of souls. 3. EQUILIBRIUM, RATIONAL BALANCE OR MODERATING REASON, THE TRUE EXERCISE OF LIBERTY. For there are many things which restrain and prohibit human wills from breaking out into open action, which things are so many checks and resistencies; to wit, the circumstance that certain conduct is unbecoming or dishonorable, diverse loves or cupidities (whereof one restrains the other), fear, necessities, impossibilities. In order therefore that there may be equilibrium of minds, there is required moderating reason, prudence, or a rational balance. In other respects equity also corresponds to equilibrium, but only where the just and unjust are the subjects treated of. The true exercise of liberty is the genuine equilibrium of human society, but its abuse is the destruction of equilibrium; on which account there are forms of governments, rulers, subjects, punishments, rewards, and this solely for the restraining of license, and the binding of men that they may truly enjoy the liberty granted them. If

the divine will were to rule absolutely, liberty itself, such as it now is, would be annulled; and if there were no liberty there would be no human proprium, and consequently neither would society subsist such as it now is. See *Liberty*.

12. *Confirmation of the propositions.* 1. That the world would perish if all conatus were to break out into open motion. For in the universal world there is no substance wherein is not force, and conatus to action, that is, its own nature [Cf. n. 5, 8]; and this, even in heavy bodies and the elements. That the atmospheric parts endeavor after expansion, but that the individuals mutually hold in and restrain each other, whence arises equilibrium which is both particular and general, is a matter of ascertained knowledge. 2. A like reasoning applies if all will were to break out into open action; for then man would perish, or there would be no rational mind; for man is a man in that he is a rational mind. The human therefore consists in being able to restrain one's cupidities and insane endeavors after action. Consequently, if deprived of this power, man entirely ceases to be a man. Moreover, the internal sensories, or rather motories, and also the muscles of the body, are so constructed that when all are simultaneously determined into act, there is a general equilibrium between them; for action results from a greater particular force under a general. 3. That there is a providence of God not operative or effective, is a fact that is true theologically. God provided and willed that all men should be saved, but this universal will or providence is not followed by its effect; for there are those who resist the Divine grace; and upon such men this providence cannot be effective and operative.

EXAMPLE IV.

13. In all conatus there is present direction and celerity.

In all will there is present intention and determination of action in respect to degrees and moments.

In all providence there is present divine disposition and the succession of things.

14. God disposes, man intends and proposes, nature obsequiously directs the effects.

15. *Correspondences.* 1. DIRECTION, INTENTION and DIVINE DISPOSITION. To direction, which pertains to nature, corresponds both intention and determination which pertain to the rational mind. For nature is dead, and therefore cannot have intention from any voluntary principle; but still it can direct, in that it is directed. 2. CELERITY, DETERMINATION OF ACTION IN RESPECT TO DEGREES AND MOMENTS, SUCCESSION OF THINGS. To direction and celerity properly corresponds determination of action in respect to degrees and moments, that is, in respect to space and time.

16. *Confirmation of the propositions.* 1. That in all will there is present intention, is apparent from common sense and common speech, to wit, that we are regarded, or our actions are judged, from the will or intention; the two words are thus taken as synonyms. Experience alone confirms the proposition that in will there is determination of action in respect to degrees and moments. 2. That in providence there is present divine disposition and the succession of things, is indeed evident without confirmation. But in order that this providence may exist, it is necessary that there be nature, a world, human society, and thus time, space, and many other things pertaining to nature and the world. Wherefore providence cannot be predicated of God without nature, that is, it can be predicated only in a created world.

EXAMPLE V.

17. The force of inertia and passive force are the principle of gravity and the cause of rest in the substances of the world.

Sluggishness and indifference are the prin-

ciple of determination and the cause of inaction in the human body.

18. Correspondences. 1. THE FORCE OF INERTIA and SLUGGISHNESS. In the animal kingdom there is nothing that corresponds to the force of inertia except sluggishness; otherwise it would be torpor, cold, or death; but the subject here is correspondence with the living animal. 2. PASSIVE FORCE and INDIFFERENCE, that is to say, not being moved, or not suffering oneself to be aroused to reaction, as is the nature of passive force. 3. GRAVITY and INDETERMINATION. 4. REST and INACTION.

19. Confirmation of the propositions. 1. The force of inertia is not a dead force, but it exists when a body is deprived of the force of reacting in the same ratio as it is acted upon, that is, is deprived of its elastic power. Thus the impressed force is absorbed, since that body does not then give back as much as it receives. Such is the nature of corpuscles of the angular form; for in such corpuscles all the least points become quiescent, that is, they enjoy no force or conatus of action,—this being due to a certain perpetual resistance and collision in their least constituents. Hence it follows that in such corpuscles there is gravity, rest, cold, and the like, which are purely terrestrial predicates. 3. Such a perpetual opposition and contrary direction sometimes exists also in human minds, whence comes indetermination and inaction; this arises also from sluggishness and indifference which absorb the forces as though the subjects were devoid of sensation.

20. Rules. One of the classes may be wanting, owing to there being no corresponding representative; as in the present case; for in things divine there is nothing corresponding to sluggishness, inertia, gravity, rest, indetermination, inaction; for properties that pertain rather to death, are not predicable of pure and veriest life.

EXAMPLE VI.

21. From effects and phenomena judgment is made concerning the world and nature, and

from the world and nature conclusion is made as to effects and phenomena.

From actions and inclinations judgment is made concerning man and the rational mind, and from man and his mind, when known, conclusion is made as to actions and inclinations.

From works and the testimonies of love judgment is made concerning God, and from God conclusion is made as to His works and the testimonies of His love.

HARMONY OR ANALOGY.

22. As the world stands in respect to man, so stand natural effects in respect to rational actions.

As man stands in respect to God, so stand human actions in respect to divine works.

23. *Correspondences.* I. PHENOMENA, INCLINATIONS, TESTIMONIES OF LOVE. In the animal kingdom there are indeed other phenomena besides inclinations; such for instance as sensations, perceptions, thoughts; but inclinations are the main thing, in that from them can be judged the nature of man and the states of his mind. So also the marvellous works of God, all of which are testimonies of His love towards us and for our salvation.

24. *Confirmation of the propositions.* I. There are two methods of learning and of teaching, to wit: From effects and phenomena to judge concerning the world and nature,—which is called the analytical method. Or, from the world and nature, when known, to make conclusions as to effects and phenomena,—which is called the synthetic method. 2. That from the world we can be instructed concerning the Divinity, is confirmed by the Apostle in his Epistle to the Romans, ch. i, v. 19, 20: “That which may be known concerning God is

manifest in them; for God hath made it manifest to them. The invisible things of God from the foundation of the world, being perceived from the things which He hath made, are clearly seen, even His eternal power and divinity; to the end that they may be without excuse."

25. *Rules.* From the several examples that have been adduced, a certain analogy may be formed, and from the analogies an equation, which may again be reduced to its own analogies; as in the following: As the world stands in respect to man, so stand natural effects in respect to rational actions; and so likewise in the other examples. And if the world be denoted by w , man by m , effects by e , and action by a , they may be joined together in the form of an analysis, to wit, $w:m::e:a$. The manner in which these terms should be associated with others, be multiplied, and from them an analytical equation be formed, will come for demonstration elsewhere. These are the first rudiments of that universal mathesis of which mention was made above.* There is also a continuous ratio or analogy; for example: As the world is to man so man is to God. From which analogy it follows that God passes over into the world through man; or, that God has nothing in common with nature except through man; also, that the perfection of nature depends on the perfection of man; for God, the founder of nature, disposes the world no otherwise than in accordance with the quality of the medium or man whereby He communicates with the world.

EXAMPLE VII.

26. Nothing can stop the course of nature, so long as the sun, by means of the auras and

*No mention of this *universal mathesis* (or mathematics) is made in the preceding part of the present work, and there can be hardly a doubt but that the reference is to the work on THE SOUL OR RATIONAL PSYCHOLOGY. Chapter XXII. of this work is en-

titled "A universal mathesis" (n. 562 seq.), and at the end of this chapter (n. 567) the author announces his purpose to publish a work with the title "A Key to natural and spiritual arcana, by way of correspondences and representations."

atmospheres, is able to fill the world with active forces and the rays of his light.

Nothing can arrest the course of human life, so long as his spiritual mind or soul, by means of the rational mind and animus, is able to enlighten the man with perpetual life and the rays of intelligence.

The human race will constantly endure, nor will the world ever perish, so long as God, by means of His spirit and the angels, is able to enlighten human societies with intelligence and the rays of wisdom.

EXAMPLE VIII.

27. The course of nature is stopped the instant that the sun is no longer able to illuminate his orb.

The course of human life is stopped the instant that the soul is no longer able to enlighten its man with the intellect.

The world will perish the instant that God is no longer able to illuminate the human race with wisdom.

28. Correspondences. 1. COURSE OF NATURE, COURSE OF HUMAN LIFE, COURSE OF THE LIFE OF THE HUMAN RACE. For nature corresponds to the life of each individual in particular, and also to the life of all in general. But lest this sound too harsh I desired to set forth the same thing in another way, viz., that *the human race will constantly endure*, or that *the world will not perish*; the meaning then remains the same. The course of nature also corresponds to operative providence. 2. AURA, RATIONAL MIND, DIVINE SPIRIT. The comparison of the

divine spirit with a most pure aura, or its representation by an aura, is a matter of frequent occurrence in the Scriptures.* Our rational mind is the same as our spirit, as has been noted in its own place.† Thus the three terms mutually correspond to each other. 3. ATMOSPHERE, ANGELS, ANIMUS. An atmosphere, such as the etherial and aerial, is a lower aura; to this also, the angels are likened. A like spirit or genius is our animus to which are attributed affections and passions. 4. ACTIVE FORCES, LIFE, INTELLIGENCE. Whether you say nature or active forces it amounts to the same thing, for universal nature is the aggregate of active forces; forces are the singulars or parts of nature, while nature is a general term. That nature and life mutually correspond to each other has been pointed out above [n. 8, 9]; and so likewise these active forces. Intelligence is a more distinct and superior life, and, in the third class, must be substituted for life; for to live is to understand. 5. LIGHT, INTELLIGENCE, WISDOM. That natural light corresponds to intelligence is easily recognized by everyone. For we have the saying *intellectual light*; to the intellect is attributed clearness, shade, and so forth; moreover, by the help of light images are formed, whence come ideas, from which is imagination and thought and thus the intellect; and further the intellect itself is called the rational sight. Wisdom however is purely divine. It is proper (*proprium*) to man to understand but not to be wise, which latter is a gift due to God alone. 6. SUN, SOUL, GOD. In man or the microcosm there is no other sun than his soul or spiritual mind whence comes intelligence. But God is the sun of wisdom, or wisdom itself, just as the sun of the world is the sun of light.

29. *Confirmation of the propositions.* 1. The sun is the fount and principle of all natural things, and from it is the existence and subsistence of the world,—which latter is called

*See WORSHIP AND LOVE OF GOD, n. 38, note, and HISTORY OF CREATION, n. 15, where several of these passages from the Scriptures are cited.

†The reference seems to be to

some preceding work. Cf. THE SOUL, n. 344 *seq.* In the TRUE CHRISTIAN RELIGION, n. 156, we read, "The spirit of man is his mind and whatever proceeds therefrom."

the sun- or solar world* so that, in respect to all other things, the sun deserves to be termed *natura naturans*.† But it operates into the universal world by auras or atmospheres by whose means it is exhibited, present as it were in every point and corner of its universe. For wheresoever penetrate its rays, there also penetrate its force of acting and its light. With the torpidity and cessation of the sun, all things would become torpid and would cease to be; for they would cease to move, to grow warm, to be reintegrated. 2. So likewise in the animal kingdom; when the soul is unable to operate by means of the rational mind and animus, and to animate its little animal world, that is, to enlighten it with life and intelligence, that world is done for. He that is destitute of mind and animus, is lacking of life and intelligence, or is a dead man, a stock, a corpse. 3. That the world also will perish when God is no longer able by His Spirit to rule the human race, is a consequence that follows by analogy; and moreover it is confirmed from the Scriptures. For the fact that the human race was destroyed by the flood, was due to the divine spirit being no longer able to operate; and that the same will be the cause of the destruction of the world, is abundantly asserted and proclaimed by the Evangelists and Apostles. It also follows from the analogical conclusions just recited, that it is man by whom God passes over into nature, or by whom nature can ascend to God. Therefore as man is, such is the world made; which will totally perish when the human race is so perverted, as to repel all divine grace and wisdom. That such is the connection of causes, may also be concluded from the curse pronounced upon the world and the earth on account of the sin and guilt of Adam; and moreover, that happy fortunes, fertility, and the hope of years, depend on the union and harmony of our souls and minds with God.

**Solus vel solaris*. Our author seems to have here coined the word *solus* as an adjective from *sol* (the sun); for the Latin lan-

guage has no word *solus* with the meaning "solar."

†Nature naturing, or developing outward.

(To be continued.)

THE RED BLOOD.

BY E MANUEL SWEDENBORG.

N. B. The blood contains in itself all organic forms from the first spiritual to the last angular; thus it is the compendium and complex of all the forms of nature.

CHAPTER I.

THAT THE BLOOD IS THAT THICKISH, RED, HEAVY HUMOR
WHICH RUNS THROUGH THE HEART AND THE ARTERIAL
AND VENOUS VESSELS.

The blood is plainly distinguished from the other humors of the body by its redness alone. The vessels through which the blood runs are called arteries and veins. The first and last term, or the starting point and goal, where both the blood and the vessels assemble, is the heart furnished with two auricles and two ventricles. The circle of the flowing blood is carried on from the left bed of the heart into the great artery and the lesser arteries; from the arteries into the least veins and into the grand vein; from the veins into the right auricle and bed of the heart; and thence, passing through the lungs, into the left heart. This circle and gyre constitutes the great sphere of the heart; and the vessels collectively constitute the arterial and venous system, or the heart taken in a broad sense. For the heart is as it were wholly present in each single point of the artery and in each single point of the vein,—the vessels being the paths of its determinations or the radii of its operations.

CHAPTER II.

THAT THE PARTS OF THE GENUINE OR RED BLOOD ARE SPHERICAL FIGURES, OR ARE GLOBULES SURROUNDED WITH SERUM.

All that fluid mass which gushes out when a vein is opened is called blood; but pure and genuine blood is that which is

intensely red. Around it flows a serum or water, more or less clear or turbid, of a greyish blue, pale yellow, ash-grey or light green color; and rich with saline and urinous elements. Here, however, we treat only of the pure and genuine blood which, as shown by the microscope, consists of round globules. The figure of the sanguineous parts was concealed from the ancients; and from us is still concealed their internal form or structure. But this also is beginning to be opened up and laid bare by help of the optic art, though still somewhat obscurely; yet enough of it is clear to enable judgment to be made from things seen concerning the others that are not seen.

CHAPTER III.

THAT EACH BLOOD GLOBULE CONTAINS WITHIN IT AND STORES
UP IN ITS BOSOM MORE THAN CAN EVER BE DISCOVERED
TO THE EYE OR CONCEIVED OF BY THE MIND.

That the blood globule is not uniform, simple, and devoid of parts, has been made clear by the abundant evidence of the present day. For it admits of being resolved; in the capillary vessels it actually passes off into lesser globules and finally into least, which escape the sight; in a mild distillatory fire it goes off into ardent spirit, oils and phlegms; moreover, from the resolved globule come off volatile salts in such abundance as to commence the formation of an entire vegetation; the more considerable parts of which salts are seen under the microscope to be of a triangular and square form. Thus far has a deeper ocular examination, or the microscopic sight, penetrated; and from these discoveries we may well augur that things still more abundant and perfect are stored up in the lesser globules, and finally in the least. These can never come to distinct view, since this is not possible even with the globule. If, for instance, we cannot distinctly see a little insect which equals the smallest microscopic ray, how then shall we see its tiny viscera and the fabrics of its exquisitely delicate members! A similar reasoning applies to the sanguineous globule. Indeed it can be evident from what has already been explored, that if all the contents of this glob-

ule were laid bare, and if, under the magnifying glass, it should appear as large as the brain, though an infinitude of new details would come to view, yet an infinitude would still lie concealed. For the blood is the storehouse and treasury of all things in its body and contains in actuality everything in the kingdom that has existed before it, and in potency everything that exists or is about to exist after it. This is the reason why with the sickness of the blood the whole body sickens, and *vice versa*; and why, in many diseases, medicine is given for the blood alone in order that the body may be restored and come into health.

CHAPTER IV.

THAT THE RED GLOBULE OF THE BLOOD ADMITS OF BEING DIVIDED INTO SIX LESSER GLOBULES WHICH ARE PELLUCID.

The six lesser globules in one larger sanguineous globule have been plainly seen; they have also been described as to the manner in which they cohere and fit together, and, moreover, have been delineated, and waxen models of them constructed. Nay, the lesser globules have been observed while separating from their body; and it has been also observed that these lesser globules when sundered from their body are pellucid, and that after the separation from the red or compound globules they penetrated the capillaceous vessels. Furthermore, it has been observed that these prior or simple globules of the blood were divided into lesser, and, in fact, into least globules, even until at last they entirely escaped the sight. These are facts, inasmuch as credence is due to the observer* and to the convincing testimony of witnesses. Now, since the parts of the red blood admit of division into simpler parts, it follows that these latter, which are the prior and more simple constituents of the parts of the blood, are not red blood but are a blood purer, interior and more perfect. The color does not change the essence, consequently neither

*Leeuwenhoek is the observer of the *Animal Kingdom*, vol. 1, referred to; see his testimony n. 29.
 quoted in the author's *Economy*

does it change the name; for this pellucid blood likewise runs through vessels, and it continues its way where the grosser blood cannot go. Therefore I term this humor, which consists of pellucid spheres, the purer or middle blood.

CHAPTER V.

THAT IN A GLOBULE OF RED BLOOD THERE ARE ALSO MANY DIVERSIFORM PARTICLES, SALINE AND URINOUS.

Besides the lesser and pellucid globules which constitute the larger or rubro-sanguineous globule, there are also angular, or saline and earthy parts. These also have been seen and described, but only such of them as are of a square or cubic form; the others, perhaps, being too small to be visible. But that, within a single red globule, there are forms both triangular and square, can be inferred from the circumstance that in so great a whirl and swiftness of fluxion, the six lesser globules could not cohere together unless there were forms within the compound which shall strengthen and bind the structure. For the blood globules are flexible and soft and admit of being stretched to twice or thrice the length of their diameter; and although these globules allow of extension and even division, yet they are all of equal dimension; from which it very evidently follows that there must be some fulcrum and support whereby globules of such nature cohere together in their compound. Saline parts both primitive and compound are angular; that is to say, they are inert and figured, or, are most minute, trigons and squares hollowed out so as exactly to fit the convexity of the parts that are fluent and active. Thus they are made and formed for the sake of copulation with round parts, that is, with the genuine parts of motion, to the end that they may temper and moderate the activity of these latter, and render them able to be further or successively compounded into forms. In order therefore that the six globules united in one compound may cohere together, it is necessary that there be in the middle a little cube furnished with six sides or eight angles, and hollowed out on each side. If a highly fluent humor apply itself to the hollow sides of this cube, it necessarily goes off into

globules, each one of which will be of a dimension and convexity commensurable with the corresponding concavity of the side. But in order that these globules may be set in, there must fit into the several corners or angular interstices, which are eight in number, still smaller forms which must be triangular; when these have been rightly inserted, then the compound will be entirely coherent. The little cube in the middle which serves the place of a base is properly a part of common salt, while the triangular forms are volatile and urinous salts. Of such elements also is made up that ardent spirit and the several species of oils into which distilled blood goes off. Moreover such parts float about in the serum and are proffered to the blood. Nay, that the parts which issue in abundance from resolved blood are of this nature is clear from the vegetation which such parts set out to form; also from the little cubes that are seen issuing forth; and from the fact that similar cubes are found in the caput mortuum after the distillation of blood; and moreover from the consideration that without such an application of the parts no composition would be possible, still less could the red blood be the treasure house of the prior humors and the seminary of the humors that follow. From triangular, square and round forms applied in this way, a globule arises which not only is coherent, but is also spherical in figure, voluble, flexible, fluid, adaptable to every straitness of passage, soluble, ruddy, heavy, warm, and possessed of the prior elements of the whole mineral and vegetable kingdom,—a globule that holds all its parts, growing together as it were spontaneously, mutually compacted, arranged in the utmost order, and among which rules the one and only spirituous substance which lies within the smaller globules.

CHAPTER VI.

THAT THE REDNESS OF THE BLOOD ARISES IN EACH GLOBULE
FROM THE INTERPOSITION OF SALINO-VOLATILE PARTS.

If in the middle of a blood globule, in the place of fulcrum, there be a little cube furnished with six sides and eight angles; and if at each angular interstice where the smaller globules are mutually applied to each other, there be inserted minute

trigons and squares, that is, salino-urinous parts, redness must needs be the result. For color is a modification and variegation of the rays of light; and a reddish color must certainly arise when the rays are trajected through an object of this kind thus interrupted at regular intervals by trigons and squares; for the incident light-rays penetrate with perpetual refraction to the little cube which holds the place of centre, and, bounding back therefrom, gyrate, as it were with a whirl, around the lesser globules set at the sides. It is a matter of ascertained fact that nothing produces the varied ratio and form of shaded light more distinctly and exquisitely than salts,—volatile, urinous, alkaline,—and sulphurs, as being so many inserted corpuscles—triangular, prismatic and quadrangular. When such corpuscles combine together in an ordered manner to form a structure, there thence results a common modification, either red, or green or yellow; and a scene comes forth which is distinct and comprehensible in appearance, only by the common perception of sight. The difference is, that if, in the sphere, there is a smaller proportion of light or rather of whiteness, it becomes green and sky-blue; if there is a larger proportion it becomes yellow. This is confirmed by passing solar rays through glass balls, aqueous bubbles and vapors, and prisms set in various positions; by the appearance of colors in spaces where shade begins to be notably discriminated from light; by divers chymical mixtures and precipitations; by the whole vegetable kingdom so beautifully adorned with colored objects; and by an infinitude of other phenomena; from all which when thoroughly examined it clearly appears that in color there is nothing at all that is real. From these principles it is also apparent why the blood is more or less red, palish, yellowish, greenish, and why sometimes it becomes unpleasantly black.

CHAPTER VII.

THAT THE GRAVITY OF THE RED BLOOD RESULTS FROM THESE
SAME SALINE AND URINOUS PARTS WHICH ARE
WITHIN THE GLOBULES.

Red blood is heavier than water, since when placed in water it sinks to the bottom. The cause of this gravity can be de-

rived only from parts furnished with inertia and resistance such as are all angular and terrestrial parts, or those belonging to the mineral kingdom. For the force that determines the gravity of bodies, must by all means reside in the purest circumfluent atmospheres which press upon the several points of non-elastic bodies with a highly active force and with a definite direction towards a common centre; so that gravity, which is tendency towards the centre, arises from substances of the world endowed with neither gravity nor levity. Hence it follows that these salino-urinous and volatile parts which are within the blood globules, and of which we have treated above, are the proximate causes of the gravity of the blood. Consequently, from the gravity of the blood the quantity of such parts can be inferred. It would therefore be worth while to institute a comparison between a volume of red blood and a like volume of purer blood; for heavier blood is for the most part harder, because impregnated with a larger number of earthy elements; while lighter blood is relatively soft and is at the same time tinged with a more pleasing red.

CHAPTER VIII.

THAT THE HEAT OF THE BLOOD VARIES AND THAT IT ARISES
FROM VARIOUS CAUSES.

Animal life contributes to the blood a certain proprial heat inmosty concealed in the structure of its several parts. But this heat is a mild warmth which gently fosters the viscera and duly kindles the fires of the laboratories distributed through the system, for the performance of their works. According to the emotions of the animus and by reason of vitiation of the body, it is sometimes intensified, and as it were boiling, and impotence occupies the burning viscera. Sometimes it fails and often to such an extent that the members are seized with cold. As soon therefore as the blood is emitted from its natal veins, then, because of the loss of its heat, it begins to be extinguished, to turn to cruor and corruption, and to thicken into a viscid and pultaceous liquor. Therefore in the blood, that heat is most mild; it is further augmented and becomes sensible to the touch; and finally it is an im-

moderate febrile heat. But nothing more sharply excites heat than volatile urinous elements such as lie concealed in sulphurs, bitumens, resins, various kinds of wax, oils, spirits, nitres and vegetables; and nothing more promptly and suitably promotes it than the auras, and the spirituous fluids emulous thereof in the animal kingdom. In consequence, there is nothing more apt than a blood which gives lodgment to the aforesaid volatile urinous and sulphureous elements, and at the same time to the spirituous fluid, and which has inmosty united itself in consort therewith. Therefore genuine heat increases with the abundance of the spirituous fluid and of the volatile elements adjoined thereto, as is the case in tender years; it decreases with the decrease of that abundance, as in old age; it varies by reason of the changed nature of the blood due to a vast diversity of causes; it is perpetuated by means of continual coalitions and solutions of the parts, and also by means of its continual exercitations caused by the brains. From these circumstances it is apparent that there is nothing real existent in heat, fire, flame, cold, since they are affections and qualities of substances either trembling and gyrating, or, on the other hand, quiescent.

CHAPTER IX.

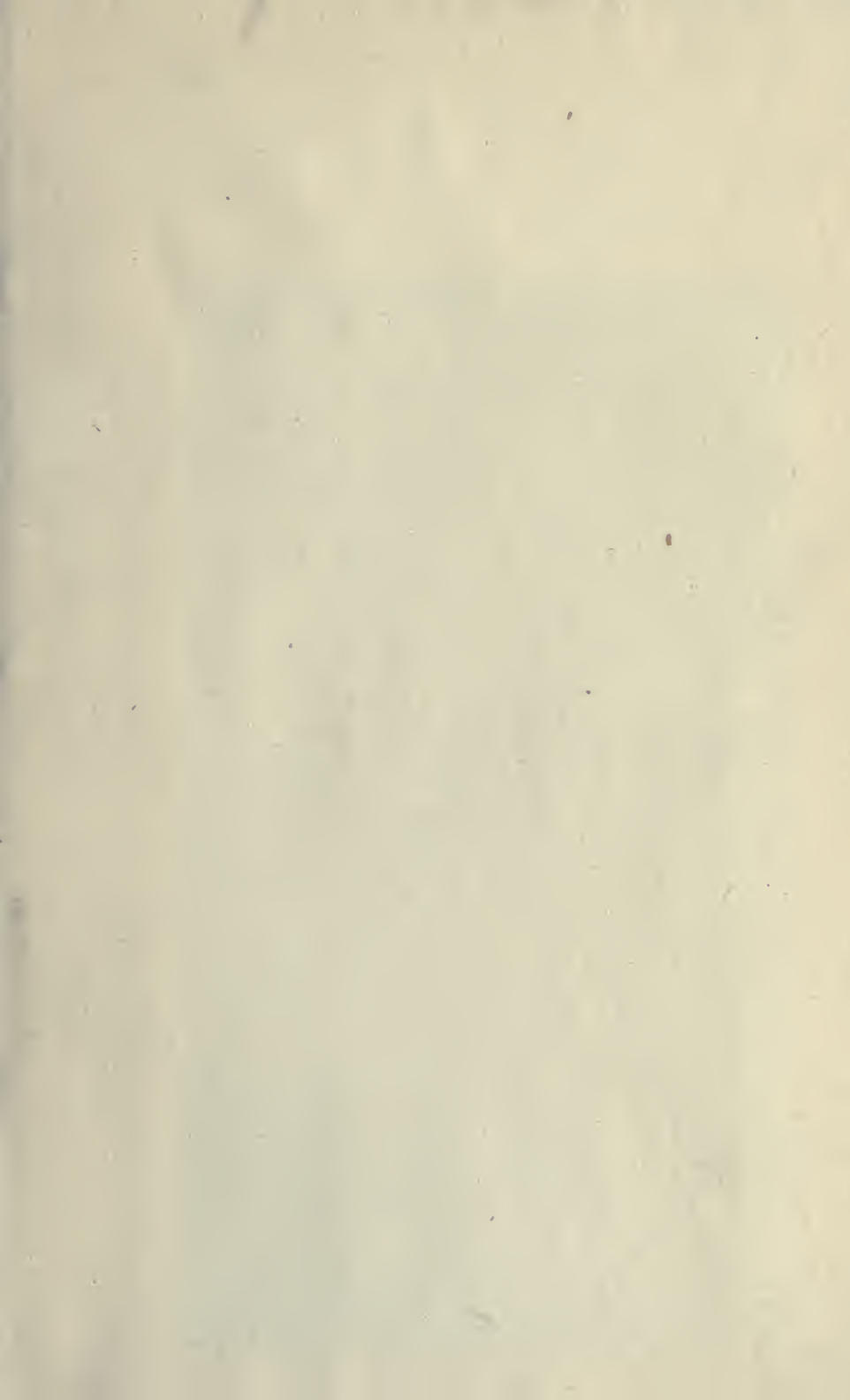
THAT GENUINE BLOOD IS SOMEWHAT SOFT, AND ADMITS OF EXTENSION; AND THAT THIS ITS SOFTNESS ARISES FROM THE PURER AND WHITE BLOOD WHICH LIES WITHIN THE RED GLOBULES.

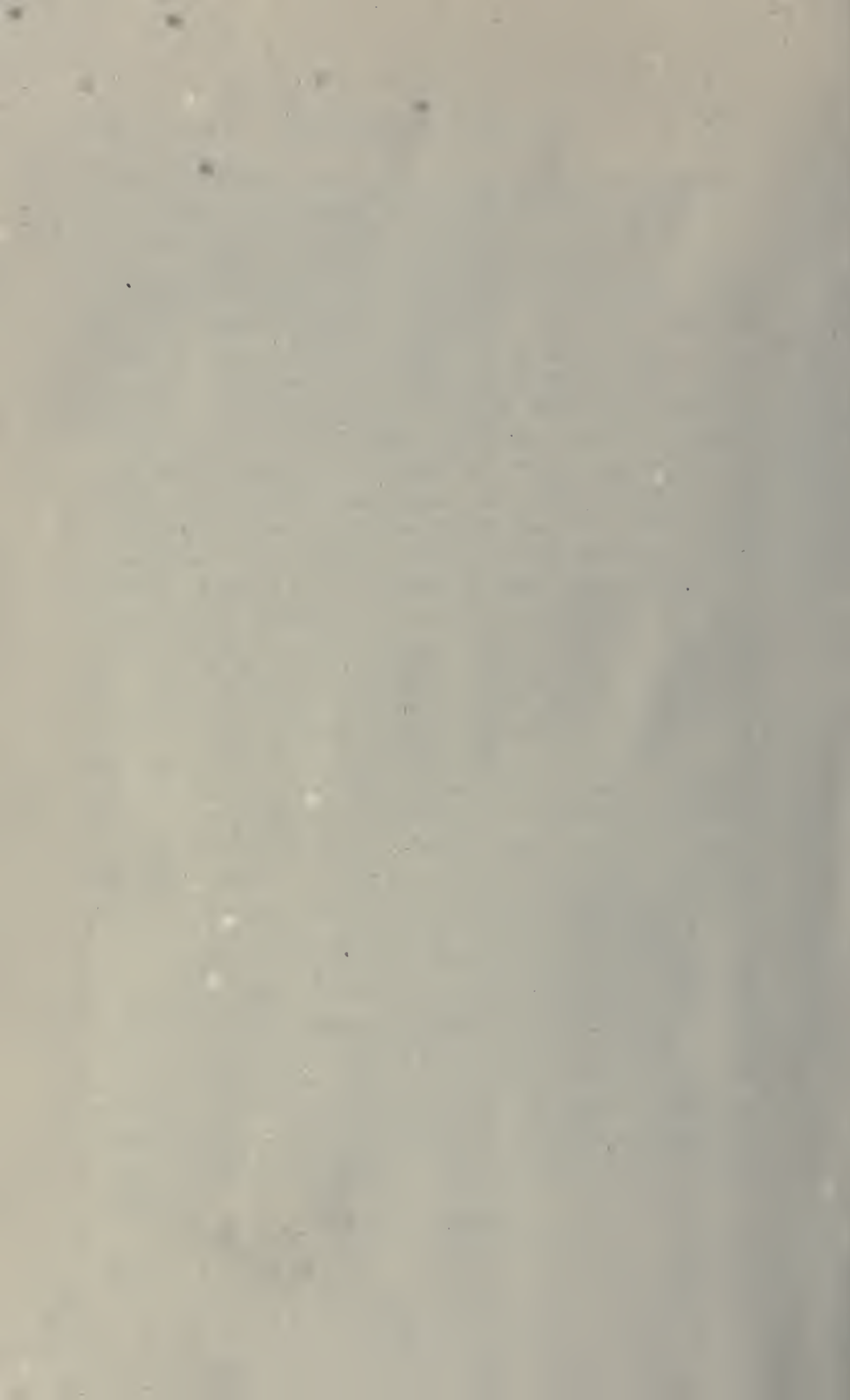
That the genuine blood is soft and flexible so that it can be stretched to two and even three times the length of its diameter, and can also be divided, is a fact so fully discovered by microscopical observation that there remains no room for doubt. Observers have seen the blood globules in capillary vessels being compressed into a longish or oval figure, and finally being disrupted into a number of little parts and globules.* But since, by reason of the abundant testimony of

*See 1 *Economy of the Animal Kingdom*, n. 29, where these observations are quoted in further detail and with the references.

visual experience, there can be hardly a doubt respecting the softness, extensibility and divisibility of the globules of the blood, the question arises, Whence is the cause? The very same experience proves that these lesser globules, which, six in number, are inset in the larger, are the parts that yield; for they admit of being drawn out as it were into a thread, while the larger globule admits only of compression. Consequently the cause of the flexibility resides in those lesser globules, not in the salino-urinous and sulphureous particles,—which latter are hard, inert, and passive, and are acquired only for the purpose of copulation. These lesser globules, which constitute the purer blood and which constitute the animal spirit, are so soft and flexible that they yield at the least impulse and attacking force. For the perfection of the entities of purer nature consists in their being yielding, in their being as highly passive as they are active; thus they represent the most perfect forces of nature,—which cannot be done by hardness and gravity; for hard bodies absorb and extinguish the attacks and forces, while elasticity and yieldingness, and a passivity equal to the activity, suffers none of the force to be lost, but, receiving it, pours it around into the neighboring parts and into the universal volume. Furthermore, if the perfection of purer entities consists in mutability of state, it also follows therefrom that they must be soft, yielding, and flexible, or that they must be as highly active as they are passive; otherwise they could not accommodate themselves to the several forces; thus neither could the soul sense, imagine, think, that is, discern the least differences in represented objects which are so many forms; nor could the animal spirit run through the fibres and determine into act whatsoever the mind strives after and wills. Therefore the purer blood and the animal spirit, which is also a more simple humor of the animal kingdom, is the cause of the flexibility found in the blood globules. From these considerations is also apparent the nature of the structure of the blood globules.

(To be continued.)





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